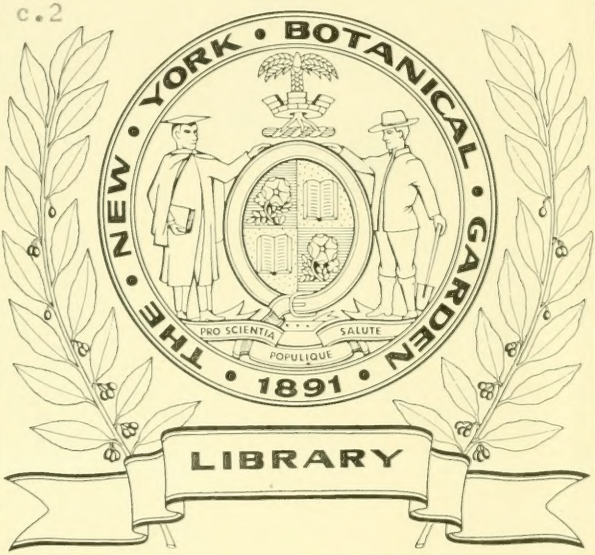
QK354.7
.R5
pt.1
c.2



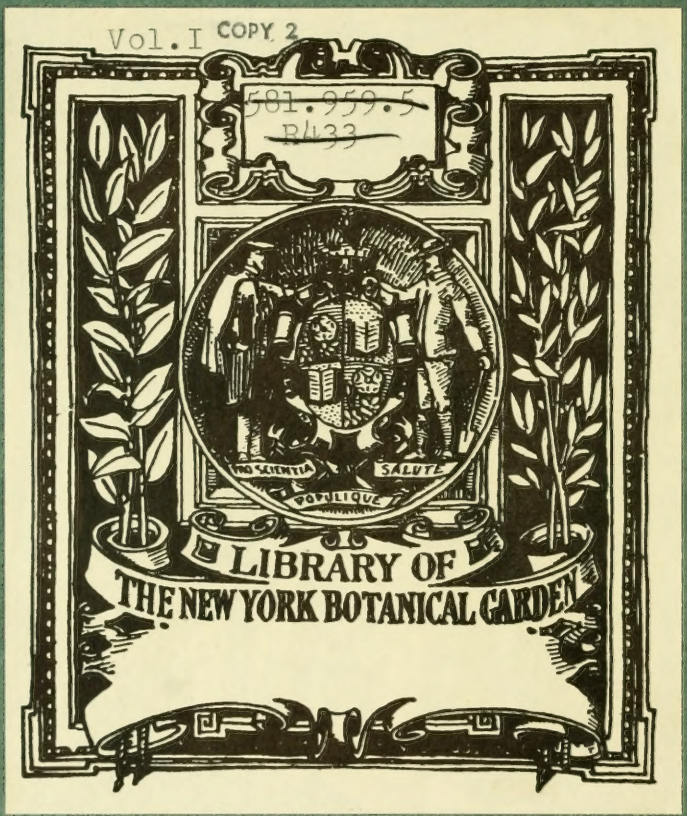
MATERIALS FOR A

FLORA OF THE MALAYAN PENINSULA

PART I

H. N. RIDLEY, M.A., F.R.S., F.L.S., F.R.H.S.
DIRECTOR OF BOTANIC GARDENS,
SINGAPORE, S.S.

Vol. I COPY 2
581.959.5
R433



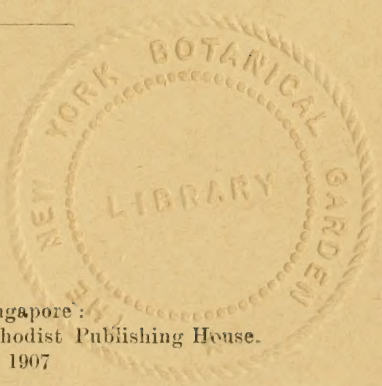
Materials for a Flora of the Malayan Peninsula

by

H. N. RIDLEY, M.A., F.R.S., F.L.S., F.R.H.S.

Director of Botanic Gardens,
Singapore, S.S.

PART I



Singapore:
Printed at the Methodist Publishing House.
1907

QK354.7
.R5
pt.1
c.2

NEW Y
BOTAN
GARD

Part I.

CONTENTS

		Page
Hydrocharideae	... ...	3
Orchideae	... ...	7
Apostasiaceae	... ...	0

Gift of Paul Culler

AUG 17 1965

Materials for a Flora of the Malayan Peninsula.

MONOCOTYLEDONES.

Herbs, shrubs or trees with endogenous stem structure. Leaves usually parallel—veined, perianth lobes, andrœceum and pistils in threes or multiples of three. Seeds with one cotyledon only.

PETALOIDEAE SYNCARPEAE.

Perianth of two whorls.

Ovary inferior.

Aquatic herbs often unisexual. Stamens 3 to 12	I. *Hydrocharideae.*
Terrestrial or epiphytic plants. Flowers irregular.	
Stamens and style connate into a column	II. *Orchideae.*
Stamens 2-3 connate at base only ..	III. *Apostasiaceae.*
Stamens free to base, one to five perfect	IV. *Zingiberaceae.*
Flowers regular bisexual.	
Stamens 6 excluded	V. *Amaryllideae.*
Stamens 6 included.	
Perianth tubular, small herbs often saprophytic	VI. *Burmanniaceae.*
Large herbs. Perianth campanulate	VII. *Taccaceae.*
Flowers regular unisexual, climbers.	
Fruit a winged capsule .. .. (except *Trichopus* bisexual erect herb).	VIII. *Dioscoreaceae.*

Ovary superior.

Perianth segments 4, climbers	IX. *Roxburghiaceae.*
Perianth segments 6, all similar, stamens 6 equal	X. *Liliaceae.*
Perianth segments 6, stamens unequal ..	XI. *Pontederiaceae.*

Outer perianth whorl sepaline, inner corolline.
Stamen 1 .. .. XII. *Philydraceae.*
Stamens 3.
Flowers in a terminal head of brown bracts. Leaves grassy XIII. *Xyrideae.*
Flowers in panicles or capitula axillary or terminal. Leaves herbaceous .. .. .. XIV. *Commelinaceae.*

PETALOIDEAE APOCARPEAE.

Carpels separate usually numerous.
Minute saprophytes, leafless .. .. XV. *Triurideae.*

Aquatic plants leafy.
Perianth, petals conspicuous white .. XVI. *Alismaceae.*
Perianth often absent .. .. .. XVII. *Naiadaceae.*

CALYCINAE.

Perianth lobes calycine stiff small.
Herbs or climbers, leaves entire .. .. XVIII. *Flagellariae.*
Trees or shrubs. Leaves usually pinnate XIX. *Palmae.*

NUDIFLORAE.

Perianth none.
Shrubs or trees unisexual. Leaves linear stiff .. .. XX. *Pandanae.*
Herbs inflorescence bisexual, leaves broad herbaceous .. .. XXI. *Araceae.*
Aquatic floating plants, flowers solitary minute .. .. XXII. *Lemnaceae.*

GLUMACEAE.

Flowers enclosed in dry bracts. Flowers unisexual.
Perianth segments 6 or less minute XXIII. *Eriocaulaceae.*
Flowers usually bisexual in spikes. Perianth none.
Stem solid usually triquetrous. No paleae or lodicules .. .. .. XXIV. *Cyperaceae.*
Stem usually fistulous and terete. Paleae and lodicules .. .. XXV. *Gramineae.*

I. HYDROCHARIDEAE.

Aquatic herbs, stem short, stoloniferous or elongate leafy. Leaves linear lanceolate or broadly ovate. Flowers regular usually unisexual inclosed in a spathe. Perianth usually of two whorls, sepals 3, petals when present 3 white or yellow, stamens 3 to 12, filaments short. Ovary inferior one-celled, placentas parietal 3-6, style divided, ovules numerous.

An order of about 50 species extending all over the world.

Freshwater, stems long and leafy.

Leaves whorled .. .. .. 1. *Hydrilla.*
Leaves alternate .. .. .. 2. *Enhydrias.*
Stem short leaves radical.
Flowers small, petals linear .. 3. *Blyxa.*
Flowers large, petals ovate .. 4. *Ottelia.*

Marine, rhizome creeping.

Leaves linear. Male flowers very numerous in the spathe .. .. 5. *Enhalus.*
Leaves ovate. Male solitary .. .. 6. *Halophila.*

1. Hydrilla, L. C. Rich.

Submerged stem elongate branched leafy. Leaves short in whorls of 3 or 4, or lower ones opposite. Flowers unisexual, solitary in axillary spathes. Male shortly pedicelled. Sepals ovate, petals narrower. Stamens three, anthers ovate two-celled. Female sessile, spathe tubular. Perianth as in the male but segments narrower. Ovary enclosed in the spathe except the long beak. Styles 3 rarely 2 linear. Fruit narrow, seeds oblong.

A single species occurring in Tropical Africa, Mascarene Islands, Asia and Australia.

Hydrilla verticillata, Presl. Bot. Bemerk. 112. Stem 6 inches to a foot long, slender. Leaves ¼ inch long oblong acute denticulate. Hook. fil. Fl. Brit. Ind. V. p. 659. Royle Ill. Bot. Himal. 376. *Serpicula verticillata* Roxb. Corom. Pl. t. 164.

Rare, Kelantan in the river at Kamposa (Ridley).

2. Enhydrias, Ridl.

Stems elongate branched leafy. Leaves alternate narrow linear. Flowers solitary base enclosed in a tubular spathe hermaphrodite. Perianth tube long slender. Calyx lobes lanceolate acute 3. Corolla lobes much longer linear. Stamens three adnate to the mouth of the corolla tube short, anthers linear, 2 celled. Styles 3 shorter than the

stamens. Fruit narrow flattened, ovules numerous anatropous. Seeds fusiform papillose. Distrib. species one Malaya.

Enhydrias angustipetala, Ridl., Journ. Bot. 1890, p. 99. Stems 6 inches to 2 feet long $\frac{3}{8}$ inch through, submerged. Leaves linear lanceolate acuminate alternate, crowded below the flower, or $\frac{1}{8}$ to $\frac{1}{4}$ inch apart olive green or dull red, minutely denticulate one-nerved. Flowers solitary sessile. Spathe 1 inch long, apex bifid, flattened edges keeled, perianth tube above the spathe $1\frac{1}{2}$ inch long, slender, greenish or pinkish white. Sepals lanceolate acute, $\frac{1}{8}$ inch long. Petals more than $\frac{1}{4}$ inch long narrow linear lorate obtuse white. Stamens very slender, anthers linear. Fruit an inch long thin walled one-celled. Seeds about 14 fusiform with three longitudinal rows of short blunt processes.

Growing often in large tangled masses in ditches and ponds common. Singapore: Tanglin Garden Lake (Ridley 10721), Chan Chu Kang; Malacca: (Griffith 6039), Merlimau (Derry 231); Perak: Dindings (Ridley), Kinta (King's Collector 7086) (Scortechini), Chankat Serdang (Wray 723); Pahang: Pekan (Ridley 1497). Distrib. Borneo.

3. Blyxa, Du Petit Thouars.

Submerged stemless usually stoloniferous herbs. Leaves linear acute crowded, scapes long or short. Flowers unisexual or bisexual, enclosed in a tubular spathe. Male flowers several in a spathe, bisexual and female flowers solitary. Sepals 3 linear, petals 3 longer linear. Stamens 3 to 9. Styles short, stigmas filiform 3. Fruit very slender many-seeded, seed oblong tailed or not, tubercled.

Species about 157. Tropical Africa, Mascarene Islands, Asia and Australia.

Blyxa Malayana, Ridl., Trans. Linn. Soc. Vol. III. p. 358.

Rootstock short and stout. Leaves numerous linear acute 2 to 14 inches long $\frac{3}{8}$ inch wide flaccid deep green. Scapes several axillary, peduncle 2 to 6 inches long. Flower bisexual 4 inches long. Spathe flattened. Sepals erect linear obtuse. Petals white 1 inch long, margins toothed. Stamens 3 narrow, anthers linear. Stigmas rather thick acuminate longer than the stamens. Fruit cylindric $2\frac{1}{2}$ inch long, enclosed in the spathe. Seeds numerous elliptic blunt muricate and ribbed $\frac{1}{10}$ inch long. *B. Griffithii*, Hook. f. Fl. Brit. Ind. V. p. 661 (in part).

Common in ponds and ditches. Native name, Rumput Lumut.

Singapore: Tanglin (Ridley 1625), Chan Chu Kang (Ridley 71); Pahang: Kuala Pahang (Ridley); Malacca: Tanjong Kling (Ridley 3130), Bukit Panchur, Bukit Sabukor; Perak: Ulu Bubong

(King's Coll. 10652); Penang: Telok Bahang (Curtis 1888). Endemic.

4. Ottelia, Pers.

Submerged fresh-water herbs, stemless. Leaves crowded ovate lanceolate oblong or cordate. Flowers showy fugacious solitary in a tubular bifid spathe. Sepals 3 linear or oblong. Petals 3 larger white or yellow ovate or orbicular. Stamens 6 to 15. Anthers erect. Ovary oblong beaked. Styles linear bifid. Fruit oblong 6-valved enclosed in a spathe. Seeds numerous, testa pulpy. Species about 6 in the tropics of both hemispheres.

O. alismoides, Pers., Syn I. 400. Leaves ovate or ovate cordate, acute thin undulate petiolate, blade 6 inches long or less 4 inches wide, petiole three angled 6 inches long. Scapes 4 to 6 inches long. Spathe green winged undulate narrow or ovate an inch or more long. Perianth tube a little longer. Sepals lanceolate obtuse ¼ inch long. Petals broadly ovate unguiculate fugacious, white often tinted with pink or violet an inch long. Stamens 6 to 10, anthers linear. Ovary oblong. Fruit linear oblong subglobose 6-grooved. Seeds elliptic light brown very small. Rich. in Mem. Instit. Fr. 1811, II. t. 7, Benth. Fl. Austral. VI. 257, Hook. Fl. Brit. Ind. V. 662. *O. indica,* Dalz and Gibs. Bombay Flora 278. *Damasonium indicum,* Willd. Sp. pl. II. 276, Roxb. Fl. Ind. II, 216, Cor. pl. II. 45, t. 185, Bot. Mag. t. 1201. *Stratiotes alismoides,* Linn. Sp. pl. 535.

In ponds and ditches.

Perak: Kinta at Tambun (Ridley 7090), Larut (King's Collector 4073) 5538; Penang: Telok Kumbar (Curtis 851); Province Wellesley; Krian (Ridley); Selangor: Pudoh (Goodenough); Lankawi: Kwah (Curtis). Distrib. Tropical Africa, Asia and Australia.

5. Enhalus, Richard.

A submerged marine herb with a stout crinite rootstock. Leaves long strap-shaped in twos and threes in a basal sheath. Flowers unisexual. Male very small white numerous in a two leaved spathe. Sepals and petals elliptic or ovate. Stamens 3 filaments very short, anthers broad oblong. Female flower much larger, solitary in a large two leaved spathe. Sepals oblong. Petals longer linear. Ovary ovoid with 6 bristly ridges, long-beaked 6 celled. Styles 6 bipartite arms slender, ovules few anatropous. Fruit globose ovoid beaked with 6 hairy ridges. Seeds few large cone-shaped soft green.

Species one, Madagascar, Ceylon, and Malay seas to Australia.

Enhalus Koenigii, Rich. in Mem. Institut. Fr. 1811, II. 64. Stem woody far-creeping ¼ inch through, covered with stiff black fibres. Leaves subcoriaceous dark green 2-3 feet long, half an inch wide tip rounded. Male inflorescence on a stout peduncle two inches long. Spathes 2 lanceolate acute boat-shaped olive green 1½ inch long keeled and arm with brown bristles. Flowers very numerous shortly pedicelled white. Sepals and petals similar. Stamens pubescent. Female inflorescence on a peduncle 1-2 feet long, spathes narrower. Fruit 1½ inch long, 1 inch wide succulent with 6 broad bands of bristles. Miq. Fl. Ind. Bat. III, 27. Hook. fil. Fl. Brit. Ind. V. 663. *E. acoroides,* Zoll. Verz. Ind. Archip. pl. II. 69, Ascherson. Nuov. Giorn. Bot. Ital. III. 299. *Stratiotes acoroides,* Linn. f. Suppl. 268. *Enhalus,* Griff. Notul. 175 Ic. Pl. Asiat. t. 249, 250. *E. marinus,* Griff. l.c. 178.

Common in shallow seas round the coasts. Singapore: Bajau (Ridley 3952).

Native name Setul. Fruit eaten by children.

The male flowers became detached and float on the surface and the fruit when ripe is raised to the surface also.

6. Halophila, Thouars.

Submarine plants with slender creeping stems. Leaves in pairs in the axils of a scarious bract, flowers unisexual solitary in a double spathe. Male pedicelled. Sepals 3, petals 0, anthers 3 linear oblong sessile. Female flower nearly sessile. Sepals 3. Ovary beaked one-celled. Style 3 filiform. Fruit subglobose. Seeds numerous globular minute.

Species about 6. Tropical seas of America, Asia and Australia.

Halophila ovata, Gaud. Freycin. Voy. Bot. 430, t. fig. 1. Leaves elliptic or obovate petioled dark green ¼ to ½ inch long, ⅛ to ¼ inch broad, petiole ½ inch long. Male flower shortly pedicelled. Sepals ovate to elliptic ovate. Anthers oblong. Female pedicelled very shortly. Sepals very small, perianth at base tubular. Styles long and slender. Fruit small globose. Seeds 1 mm. across tuberculate and reticulate. Hook. f. Fl. Brit. Ind. V. 663. *H. ovalis,* Hook. f. Flor. Tasman. II. 45, Miq. Fl. Ind. Bat. III. 230, Aschers. Nuov. Giorn. Bot. Ital. III. 301. *Diplanthera,* Griff. Ic. Pl. Asiat. t. 161 C, f. 2. *Caulinia ovalis,* Br. Prodr. 359.

Common in shallow seas round the coasts. Singapore: Harbour (Ridley 3780), Changi; Johore Strait; Penang; Lankawi (Ridley).

Distrib. East African, Indian, Malayan, Australian and Pacific Seas.

II. ORCHIDEÆ.

Herbs or shrubs, either (1) terrestrial with a short stem, herbaceous leaves and a terminal or lateral spike or raceme, rarely climbing plants, often leafless saprophytes, or (2) epiphytes with short or long stems, branches of which may be swollen and fleshy, (pseudobulbs) leaves usually coriaceous, flat, distichous, or terete or (rarely) absent, roots long or short often flattened. Inflorescence axillary or terminal spicate or racemose. Perianth superior irregular, consisting of three *Sepals,* two laterals free similar to the other one, or connate more or less or prolonged below the ovary into a spur-like sac, the *mentum*. *Petals* three, two similar, the third opposite the column and upper sepal very different, the *lip,* often lobed, and spurred, and bearing processes (*calli*) of various forms. *Stamens* and *style* united into a *column,* opposite the lip. Column long or short, erect on the top of the ovary, or prolonged below it into a *foot* to which when present the lip is adnate, and frequently also the lateral sepals also. *Anther* one terminal (except in *Cypripedium,* where there are two) adnate to the top of the column, or stipitate by a short filament (sometimes forming the *hood* of the column). Pollen grains cohering in 2, 4, 6 or 8, waxy or powdery masses (*pollinia*) prolonged or attached to one or two thin flat or terete *caudicles,* terminating in a variously shaped adhesive *disc,* or caudicle and disc absent. The other two stamens are represented often by *wings* or *arms* of the column or indistinguishable. Stigmas three, the upper one forming a flat rounded or triangular entire or bifid beak below the anther, (*rostellum*) the other two forming a viscid mass sunk in a hollow of the column, or rarely protruding (*stigma*). Ovary inferior usually twisted, one-celled. Fruit capsular, or rarely baccate elliptic, pyriform or cylindric. Seeds minute.

Species over five thousand, occurring over the whole world, rare in desert and arid regions and most abundant in the tropics.

Tribes and Sub-tribes.

Fertile anther one.

Pollinia waxy 2 to 8 without any caudicle or disc	Tribe I, Epidendreae.
Pollinia 2 to 4 waxy, with one or two caudicles and one or two discs.	
Epiphytic or terrestrial	Tribe II, Vandeae.
Pollinia mealy with one or two caudicles and one disc.	
Terrestrial plants often saprophytic	Tribe III, Neottieae.

Pollinia mealy 2 with 2 caudicles and 2 discs.
Anther adnate to apex of column erect.
Terrestrial herbs .. .. .. Tribe IV, Ophrydeae.

Fertile anthers two.
Terrestrial herbs. Lip saccate .. Tribe V, Cypripedieae.

NOTE.—King (Ann. Bot. Gard. Calc. Vol. VIII. considers that the "Anther" in Ophrydeæ is composed of the inner halves of two anthers, of which the outer halves are represented by the small rugulose processes on the outside commonly known as *staminodes*. This is possible but I am hardly prepared to endorse it, especially in view of the structure of the column of *Dilochia*, in which the three anthers are clearly visible, though the two outer ones are infertile. The wings and arms of the column I believe to be the remains of the filaments of these anthers.

I. Epidendreae.

1. Malaxeae. Terrestrial or epiphytic, flowers small, inflorescence terminal, column footless. Pollinia 2-4 with no viscus.

Column short.
Terrestrial leaves flat .. .. .. 1. *Microstylis.*
Epiphytic, leaves fleshy distichous .. 2. *Oberonia.*
Column long, arms short from the top 3. *Liparis.*
Column usually long, arms from the side 4. *Platyclinis.*

2. Dendrobieae. Epiphytic rarely terrestrial, inflorescence lateral or terminal. Column with a long foot. Inflorescence lateral or terminal on an elongate stem or terminal on a two-leaved pseudobulb .. .. 5. *Dendrobium.*

Inflorescence from the rhizome, pseudobulbs one-leaved.
Column short, not hooded arms short subterminal .. .. 6. *Bulbophyllum.*
Column longer hooded, arms long from the side .. .. 7. *Dendrochilum.*

Pollinia 8.
Sepals forming a mentum .. .. 8. *Eria.*
Sepals connate into a tube .. .. 9. *Porpax.*
Sepals free. Column long .. .. 10. *Tylostylis.*
Column short
Flowers in long slender racemes, minute .. .. 11. *Phreatia.*

Flowers in terminal heads 12. *Agrostophyllum.*
Flowers in short axillary racemes 13. *Poaephyllum.*
Flowers few or solitary, axillary 14. *Ceratostylis.*

3. Bletieae. Terrestrial rarely epiphytic, stems short swollen. Leaves plicate herbaceous. Inflorescence on tall rarely short lateral scapes. Column long.

Pollinia 2, no viscus, column with lateral arms .. .. 15. *Chrysoglossum.*
Pollinia 2, no viscus, column without arms .. .. 16. *Collabium.*
Pollinia 4 or 8, column with a foot.
Lip not spurred, mobile. Pollinia 4 17. *Plocoglottis.*
Lip not spurred, not mobile. Pollinia 8 .. .. 18. *Tania.*
Lip spurred, stems pseudobulbs .. 19. *Ascotania.*
Lip spurred, no pseudobulbs .. 20. *Nephelaphyllum.*
Column footless. Pollinia 8.
Stems short swollen. Lip not spurred 21. *Spathoglottis.*
Stems short swollen. Lip spurred.
Lip convolute round column .. 22. *Phaius.*
Lip adnate to column .. .. 23. *Calanthe.*
Stems tall leafy. Inflorescence terminal.
Terrestrial. Column with no lateral anthers .. .. 24. *Arundina.*
Epiphytic. Column with 2 sterile anthers and one fertile one .. .. 25. *Dilochia.*

4. Coelogyneae. Epiphytes, rhizome creeping. Branches or pseudobulbs 2 or more leaved. Lip sessile at column base. Column without foot or arms.

Pollinia 4. Lip not saccate or spurred 26. *Coelogyne.*
Lip saccate at base .. .. .. 27. *Pholidota.*
Pollinia 2. Lip spurred, branches not pseudobulbs .. .. 28. *Claderia.*

II. Vandeae.

1. Eulophieae. Leaves herbaceous not articulated.

Lip spurred, column long .. .. 29. *Eulophia.*

Lip saccate not spurred, column short 30. *Geodorum.*

2. Cymbidieae. Leaves stiff or subcoriaceous articulated, column footless, stems short, scapes long axillary.

Stem short .. .. 31. *Cymbidium.*
Stem long. Racemes axillary .. .. 32. *Dipodium.*
Stem long. Racemes from the base 33. *Grammatophyllum.*
Stem flattened. Raceme terminal .. 34. *Bromheadia.*

3. Polystachyae. Column with a foot, sepals forming a mentum .. .. 35. *Polystachya.*
Saprophyte, leafless .. .. .. 36. *Leucolena.*

4. Sarcanthieae. Stems terete or slightly flattened, leaves coriaceous lorate or terete, racemes or panicles axillary.

Lip spurless.
Lip entire, leaves terete .. .. 37. *Luisia.*
Lip entire, leaves lanceolate .. .. 38. *Adenoncos.*

Column with a foot.
Lip obscurely 3-lobed with no callus 39. *Acampe.*
Lip distinctly 3-lobed with a rounded callus .. .. 40. *Stauropsis.*
Lip distinctly with a forked callus .. 41. *Phalaenopsis.*
Side lobes of lip forming a mentum with the long column foot .. 42. *Doritis.*
Lip 5-lobed .. .. 43. *Staurochilus.*
Lip spurred column without a foot or distinct arms. Stems elongate.
Flowers racemose or panicled.
Column short, midlobe of lip large 44. *Vanda.*
Column short, midlobe small .. .. 45. *Renanthera.*
Column long .. .. 46. *Renantherella.*
Flowers solitary pubescent .. .. 47. *Trichoglottis.*
Stem short. Lip entire .. .. 48. *Rhynchostylis.*
Stems short or long, leaves distant.
Lobes of lip small, spur with callus in the mouth .. .. .. 49. *Saccolabium.*
Leaves crowded. Pollinia 4 .. .. 50. *Microsaccus.*

Leafless, stems very short .. .. 51. *Taeniophyllum.*

Column with erect arms. Caudicle of pollinia as broad as the large disc 52. *Pelatantheria.*

Spur saccate horizontal .. .. 53. *Sarcochilus.*

Spur pendulous .. .. .. 54. *Ascochilus.*

Lip saccate mobile .. .. .. 55. *Acrides.*

Lip saccate not mobile.

Stems elongate. Bracts flattened distichous .. .. .. 56. *Thrixspermum.*

Stems short. Bracts not distichous 57. *Dendrocolla.*

5. Notylieae. Stems pseudobulbous, epiphytic. Leaves one or few.

Racemes from base of pseudobulbs.

Column long.

Lip spurred. Column foot absent.

Leaves several. Lip adnate half way up to the erect column .. .. 58. *Acriopsis.*

Leaf solitary. Lip forming a tube with the column foot .. .. 59. *Thecostele.*

6. Podochilinae. Stems slender or pseudobulbs with distichous leaves racemes laterate or terminal. Pollinia 4-8 attached to 1 or 2 elongate, or calyptriform caudicles. Rostellum elongate.

Stems tall slender. Racemes lateral or terminal .. .. 60. *Podochilus.*

Stems pseudobulbous 1-2 leaved. Scapes from base of pseudobulbs .. .. 61. *Thelasis.*

Stems short with long distichous leaves 62. *Oxyanthera.*

III. Neottieae.

1. Listereae. Column usually long. Anther terminal. Pollinia 2-4 powdery or granular without any caudicle or gland.

Climbers, leaves fleshy. Fruit baccate 63. *Vanilla.*

Leafless saprophyte. Fruit capsular 64. *Galeola.*

Tuberous herbs with one leaf.

Flowers racemose appearing after the leaves .. .. 65. *Pogonia.*

Flowers solitary in the leaf axil .. 66. *Corysanthes.*

Leafless saprophytes.

Lip 3-lobed .. .. 67. *Aphyllorchis.*
Lip entire .. .. 68. *Didymopleis.*

Sepals free. Lip free from column.
Lip adnate column face .. .. 69. *Lecanorchis.*
Sepals connate .. .. 70. *Gastrodia.*

2. Goodyereae. Anther posticous vertical but inverted. Pollinia 2-4 granular attached to two caudicles and a disc. Column short.

Stems tall leafy. Inflorescence axillary or terminal. Panicles axillary.
Perianth long narrow .. .. 71. *Corymbis.*
Racemes short axillary or terminal.
Perianth short .. .. .. 72. *Tropidia.*
Stem short. Inflorescence spicate or racemose terminal.
Lip spurred.
Spur bifid .. .. 73. *Physurus.*
Spur entire
Lip entire .. .. .. 74. *Vrydagzynea.*
Lip short 3-lobed .. .. 75. *Cystorchis.*
Lip long midlobed long clawed .. 76. *Anaectochilus.*
Lip saccate not spurred. Terminal lobe dilated. Stigma entire. Column with a boat shaped ventral process.
Rostellum moderately long. Lip large .. .. 77. *Dossinia.*
Rostellum very long curved. Lip short .. .. 78. *Macodes.*
Column with no ventral process .. 79. *Haemaria.*
Stigmas 2 distinct .. .. 80. *Zeuxine.*
Terminal lobe of lip not dilated.
Leaves few ovate or lanceolate.
Lip inferior, base boat-shaped .. 81. *Goodyera.*
Lip superior „ .. 82. *Hetaeria.*
Sac of lip globose with a short inflexed point .. .. .. 83. *Hylophila.*
Leaves numerous, long and narrow 84. *Lepidogyne.*
Lip not saccate.
Leafless saprophyte .. .. .. 85. *Stereosandra.*
Leaves long petioled from a rhizome, scape nearly leafless .. .. 86. *Cryptostylis.*

IV. Ophrydeae.

Stems short or long leafy, raceme terminal .. .. 87. *Habenaria.*

V. Cypripedieae.

Flowers large, lip saccate .. .. 88. *Cypripedium.*

1. Microstylis.

Terrestrial herbs, stem creeping cylindric or swollen at the base. Leaves herbaceous ovate or ovate lanceolate, usually petiolate. Raceme erect lax-flowered. Flowers small green, yellow, white or purple, pedicelled. Sepals usually narrow spreading. Petals linear. Lip adnate to the base of the column, flat, based prolonged into two auricles which partly surround the column. Column very short broad with short blunt arms. Anther subterminal; pollinia four and capsule erect obconic.

Species about 50 chiefly tropical, some temperate.

Stem short swollen at base.

Sides of lip produced into long auricles.

Apex bifid not toothed .. .. 1. *M. calophylla.*

Apex pectinate.

Lip crimson .. .. .. 2. *M. perakensis.*

Lip green or white .. .. 3. *M. acutangula.*

Sides of lip not auricled .. .. 4. *M. congesta.*

Stem prolonged not swollen .. .. 5. *M. micrantha.*

1. M. calophylla, Rchb. f. Gard. Chron. 1879, II. 718. Base of stem swollen. Leaves few lanceolate or obliquely ovate margins crisped 3 to 5 inches long 1¼ to 1½ wide brown with darker spots, and a paler edge. Raceme 6 inches long base nude. Flowers numerous small. Bracts lanceolate reflexed about as long as the ovary. Sepals oblong edges revolute. Petals a little longer and narrower, pink. Lip green sub-orbicular with two long recurved auricles, apex with two short teeth.

M. Scottii, Hook. f. Fl. Brit. Ind. V. 678, Bot. Mag. t. 7268. King Ann. Bot. Roy. Calc. 8, p. 17, t. 20.

Penang Rifle Range (Curtis). Distrib. Pegu and Siam.

2. M. perakensis, Ridl. Journ. Linn. Soc. XXXII. 222. Stem but little swollen nearly ½ inch through. Leaves 5-6 unequal ovate to ovate lanceolate acute plicate oblique, 6 inches long and two inches wide petiole 1-2 inches long. Scape a foot long stout 4-angled. Flowers numerous. Bracts lanceolate acuminate acute deflexed ¼

inch long. Pedicels twice as long spreading. Dorsal sepal oblong obtuse, laterals ovate oblong ¼ inch long. Petals rather short oblong, all pale pink. Lip large auricles ⅜ inch long lanceolate acute rosy violet, blade rounded with 6 long incurved teeth rosy, fovea deep elliptic. Column emerald green, arms oblong truncate.

M. plantaginea, Hook. f. Fl. Brit. Ind. V. 688 (not Steudel).

Perak: Batu Kurau (Curtis), Gunong Buku (Scortechini), Ulu Bubong (King's Collector 10426 10858), Telok Pinang (Ridley), Taipeng (Curtis). Endemic.

3. M. ACUTANGULA, Hook. f. Ic. Pl. t. 1835 Fl. Brit. Ind. V. p. 68. Stem swollen short. Leaves ovate lanceolate oblique acuminate 4-6 inches long by 1½ wide. Raceme 6 to 8 inches long base nude. Bracts lanceolate deflexed. Flowers numerous green or white ⅓ inch across pedicels ½ inch long. Sepals linear oblong. Petals longer and narrower. Lip auricles triangular acute, blade shorter pectinate all round. Arms of column large rounded.

Perak: Batang Padang, (Wray 1604), Larut Hills (Curtis); Selangor: Bukit Hitam (Kelsall). Endemic.

4. M. CONGESTA, Rchb. f. Walp. Ann. VI. 206. Stem swollen at the base 1-2 inches long. Leaves 4 or 5 unequal ovate to ovate lanceolate acuminate, the largest 6 to 7 inches long, by 2 inches wide. Raceme 8 to 12 inches long, base about half nude. Flowers very small crowded yellow or crimson. Sepals oblong, laterals broader. Petals linear blunt. Lip without auricles oblong, three lobed, lateral lobes erect broad blunt, median longer narrow blunt. Capsule erect ½ inch long, ribs crenulate. Hook. fil. Fl. Brit. Ind. V. 689, Ridley Journ. Linn. Soc. XXIV. 334. King Ann. Roy. Bot. Calc. 8, p. 19, Plate 23.

M. Bernaysii, F. Muell. Fragment XI. 21. *M. trilobulata,* Kurz Andam. Rep. App. B XIX. *M. fusca,* Rchb. f. Walp. Ann. VI. 207. *Dienia congesta,* Lindl *Malaxis latifolia,* Sm. Rees Cyclop. *M. plicata,* Roxb. Fl. Ind. III. 456.

Singapore: Kranji, Bukit Timah, etc. (Ridley); Malacca: Batu Tiga (Ridley), Mount Ophir (Derry), Smugei Hudang (Derry 162); Pahang: Selensing (Machado); Perak: Maxwell's Hill (Ridley); Penang: Waterfall Hill (7060 Ridley); Pulau Betong (Curtis 3121), Lankawi (Curtis). Native name Sigundol hutan. Very common over the Peninsula. Distrib. Tropical Himalaya, Burmah, Andaman isles, Deccan, Ceylon, Cambodia, Borneo, China, Australia.

5. M. MICRANTHA, Hook. f. Ic. Pl. t. 1834. Fl. Brit. Ind. V. p. 688. Stem not swollen creeping on rocks or the ground 6 inches long or more. Leaves subdistichous thin lanceolate or ovate lanceolate acute crisped coppery shining above, 2-4 inches long ¾ inch wide,

petiole purple ½ an inch long. Scapes one or two on a stem, slender, 6-8 inches long, half or more nude. Flowers very small scattered. Bracts linear acuminate recurved. Sepals lorate obtuse purplish. Petals a little smaller. Lip ovate with large lorate obtuse auricles bright yellow, teeth four short acute ones and a larger median obtuse one. Column green arms rounded. Capsule oblong erect ½ inch long.

Damp forests, Singapore: Changi (Ridley 3925), Seletar, etc.; Johor: Batu Pahat, (Ridley); Malacca: (R. Derry); Perak: (Scortechini), Larut Hills at 4,000 feet (Hervey). Distrib. Borneo.

2. Oberonia, Lindl.

Small epiphytes, with a very short or moderately long stem, covered with distichous equitant leaves narrow fleshy. Spike terminal slender covered with minute green yellow or red flowers. Bracts short oblong often toothed. Petals and sepals ovate reflexed. Lip entire or lobed with a circular nectariferous depression at base. Column very short, arms short. Anther ovate. Pollinia 4 adhering by a viscid disc. Capsule globose or elliptic.

About 60 species, Indo-Malayan, with a few in Africa and the Mascarene Islands, Australia, Polynesia and Japan.

§ 1. Acaules, stemless.

Lip entire flat ovate	1. *O. lunata.*
„ triangular oblong	2. *O. Prainiana.*
Lip concave emarginate	3. *O. subnavicularis.*
Lip bilobed denticulate	4. *O. iridifolia.*
Lip oblong bifid	5. *O. gracillima.*
Lip 3 lobed.	
Rhizome long creeping	6. *O. Scortechinii.*
Not rhizomatous.	
Margins of lip entire	7. *O. rosea.*
Lateral lobes toothed	8. *O. stenophylla.*
Lip 4 lobed.	
Lateral lobes short entire	9. *O. aurantiaca.*
Lateral lobes fimbriate	10. *O. insectifera.*

§ 2. Caulescentes. Stem elongate.

Lip oblong retuse not toothed ..	11. *O. anceps.*
Lip denticulate. Petals entire.	
Lip base narrow apex bilobed ..	12. *O. miniata.*
Lip broad base with large auricles	13. *O. porphyrochila.*

Petals toothed. Lip not lobed.
- Lip apex bifid .. .. .. 14 *O. Bertoldi.*
- Lip emarginate .. .. .. 15. *O. ciliolata.*
- Lip entire .. .. 16. *O. brunnescens.*

Lip 3 lobed.
- Mid lobe cuneate broad .. .. 17. *O. intermedia.*
- Mid lobe quadrate bifid .. .. 18. *O. gracilis.*
- Mid lobe with two long narrow lobes 19. *O. caudata.*
- Mid lobe narrow apex bilobed .. 20. *O. Rolfeana.*

§ 1. Acaules.

1. O. lunata, Lindl., Gen. and Sp. Orch. Pl. p. 17. Leaves few ensiform straight or falcate acuminate 3 to 5 inches long, $\frac{1}{3}$ to $\frac{1}{2}$ inch wide. Spike rather stout as long as the leaves. Bracts ovate dentate. Flowers $\frac{1}{4}$ inch across white or yellow sessile in crowded whorls. Sepals ovate acute. Petals linear lanceolate. Lip entire ovate or obscurely 3 bilobed, apex rounded, dentate. Capsule sessile triquetrous. Hook. fil. Fl. Brit. Ind. VI. 180. *O. biaurita,* Hook. f. Ic. Pl. t. 2317. *O. dissitiflora,* Ridl. Journ. Linn. Soc. XXXII. p. 218. *Malaxis lunata,* Bl. Bijdr. 394.

On trees, Singapore: Seletar (Ridley 364), Kranji, etc., Bukit Timah Road (Ridley 10154, 8187). Distrib. Java.

2. O Prainiana, King, Journ. As. Soc. Beng. Vol. LXIV. 331, Ann. Roy. Bot. Calc. 8, Pl. 1. Tufted. Leaves fleshy falcate $\frac{1}{2}$ to $\frac{3}{4}$ inch long $\frac{1}{4}$ in broad. Spike slender 4 inches long. Flowers minute distinctly verticillate, bright brown. Bract oblong subentire as long as the ovary. Sepals oblong blunt. Petals elliptic lanceolate serrate. Lip triangular or oblong blunt edges eroso-dentate.

Perak: (Scortechini); Penang: Penara Bukit (Curtis). Distrib. Sikkim, Siam.

3. O. subnavicularis, King, Journ. As. Soc. Beng. LXVI. II. 579. Leaves ensiform obliquely acuminate $\frac{3}{4}$ to 6 inches long, $\frac{1}{4}$ to $\frac{1}{2}$ inch wide. Spike hardly as long as the leaves, peduncle terete ebracteate. Flowers very densely crowded $\frac{1}{20}$ inch long. Bracts small lanceolate erose. Sepals ovate blunt. Petals narrowly oblong truncate. Lip about as long as broad very concave from base to apex edges coarsely retroserrate apex blunt emarginate with a central tooth.

Perak (Scortechini No. 1202).

4. O. iridifolia, Lindl., Gen. and Sp. Pl. 15, Fol. Orch. 1. Stem short. Leaves ensiform acute 3-5 inches long $\frac{1}{2}$ to 1 inch wide. Spike 6-10 inches long densely floriferous. Flowers minute green or yellow. Bracts broad toothed sheathing the ovary. Sepals ovate toothed. Petals as large or smaller. Lip orbicular ovate bifid shortly

at the tip toothed all round. King, Ann. Bot. Gard. Calc. 8, p. 8, Pl. 8, Hook. fil. Fl. Brit. Ind. V. 675. *Cymbidium iridifolium*, Roxb., Fl. Ind. III. 458. *Malaxis iridifolia*, Rchb. fil. Walp. Ann. VI. 208.

Langkawi, Pulau Hujong Duri (Curtis). Distrib. India and Siam.

5. O. GRACILLIMA, Ridl., Jour. Roy. As. Soc. St. Br. Vol. 43, p. 93. Stemless or nearly so. Leaves four or five ensiform acute 1½ inch long ⅛ wide. Spike very slender 3 to 4 inches long, glabrous, base nude for ¼ of its length. Bracts lanceolate acute entire longer than the ovary. Flowers minute, whorled, 5 or 6 in a whorl. Sepals oblong obtuse recurved entire. Petals broader ovate toothed all whitish. Lip orange oblong tip acute bifid with a wide sinus between the lobes, edges minutely toothed, auricles short rounded.

Tringanu at Bundi (E. Rostado). Endemic.

6. O. SCORTECHINII, Hook. fil. Fl. Brit. Ind. V. p. 683. Rhizome long creeping stout with the tufts of leaves 1½ inch apart. Leaves 9-10 inches long ¼ to ⅓ inch wide ensiform curved narrowed towards the apex. Scape 12 to 18 inches long rather slender, covered with flowers in distinct whorls to the base. Bracts ovate lanceolate $\frac{1}{12}$ inch long. Flowers very small yellow. Sepals oblong obtuse. Petals ilnear. Lip three lobed side lobes lanceolate longer than the small orbicular rhomboid midlobe.

Perak: Kinta district (King's Collector 1122, 1128), (Scortechini 1588). Endemic.

7. O. ROSEA, Hook. fil. Ic. Pl. t. 2005. Leaves narrowly ensiform 2-3½ inches long ⅙ to ⅓ wide. Spike as long as the leaves or shorter Bracts lanceolate. Flowers $\frac{1}{30}$ of an inch across sessile pink. Sepals rounded ovate. Petals elliptic erose. Lip hardly longer side lobes quadrate, midlobe reniform retuse. Capsules subsessile. Hook. fil. Fl. Brit. Ind. VI. p. 180.

Malay Peninsula (W. Norris); Perak: Gunong Batu Putih (Wray 1246), Larut Hills (King's Coll. 2664). Endemic.

8. O. STENOPHYLLA, Ridley, Journ. Linn. Soc. XXXII. p. 218. Leaves ensiform falcate acute or subacute 2½ inches long ⅛ to ¼ inch wide. Spike 3½ inches long slender curved almost entirely covered with flowers. Flowers minute in scattered fascicles. Bracts as long as the ovary lanceolate acuminate. Sepals and petals equal ovate oblong obtuse. Lip lateral lobes widely oblong laciniate, midlobe longer triangular emarginate with acute angles.

Johor: Hulu Sembrong (Lake and Kelsall). On coffee trees Sungei Tebrau (Ridley).

9. O. AURANTIACA, Ridley, Journ. Bot. Vol. 36, p. 210. Leaves about 6 falcate acuminate fleshy dark green 2 inches long $\frac{1}{8}$ inch wide or less. Spike 4 inches long nodding base covered with lanceolate acuminate bracts. Bracts narrowly linear acuminate. Flowers minute whorled. Sepals ovate spreading orange. Petals oblong obtuse tips toothed, much narrower. Lip narrow oblong red much longer than the sepals, lateral lobes short oblong obtuse narrow, median long narrowly oblong bifid at the apex. Column rather longer than usual.

Selangor: Kajang (Goodenough). Endemic.

10. O. INSECTIFERA, Hook. fil. Ic. Pl. t. 2004. Leaves ensiform straight narrow upwards 2 to 4 inches long $\frac{1}{3}$ inch wide. Spike about as long as the leaves. Bracts subulate minutely erose. Flowers subwhorled sessile $\frac{1}{20}$ inch across. Sepals ovate subacute. Petals linear. Lip much longer, side-lobes 2-3 partite with linear lobules, midlobe much longer with two linear lobes. Capsule shortly, pedicelled. Hook. f. Fl. Brit. Ind. VI. p. 180.

Pahang: Tahan River (Ridley); Perak: Larut Hills at 3,500 feet altitude (King's Coll. 2793). Endemic.

§ 2. CAULESCENTES.

11. O. ANCEPS, Lindl., Sert. Orch. sub. t. 8. Stems tufted 4 to 10 inches long with short cultrate leaves $\frac{1}{4}$-$\frac{1}{2}$ inch long very numerous and close. Spike cylindric 1-3 inches long densely covered with flowers. Bracts ovate entire, concealed by the flowers. Flowers ocreous. Sepals ovate. Petals much smaller linear, entire all reflexed so as to be invisible behind the broad lip. Lip ovate or oblong ovate emarginate longer than the sepals. Column arms bright green. Capsule sessile globose. Lindl. Fol. Orch. 6, Hook. f. Fl. Brit. Ind. V. 685. *O. imbricata,* Wight. Ic. t. 1629 (not Blume). *O. Griffithii,* Wight. Ic. V. 4. *Malaxis anceps,* Rchb. f. Walp. Ann. VI. 214.

Singapore: Galang (Ridley 9513), Kranji (Ridley); Malacca: Tanjong Kling (Ridley); Pahang: near Pekan (Ridley 1559), Pasir Loyang (Ridley); Selangor: Ginting Bidai (Ridley): Perak: Dindings (Ridley) (Scortechini); Penang: Waterfall Hill (Curtis). Distribution Tenasserim. Native name, Sakat Lidah Buaya.

Leaves used for poulticing. The largest native species easily distinguished by its long stem and dense spike of yellow flowers.

12. O. MINIATA, Lindl., Bot. Reg. 1843, Misc. 8. Stem short 1-1½ inch long. leaves ensiform acute about 8, one inch long $\frac{1}{4}$ inch wide. Spike slender 1½-8 inches long puberulous base nude. Flowers $\frac{1}{10}$ inch across lax pedicelled, red. Bracts lanceolate shorter than the pedicels. Pedicels puberulous. Sepals ovate, ciliate. Petals narrower. Lip base narrow dilated towards the apex denticulate bilobed. Lindl. Fol. Orch. 6, Hook. f. Fl. Brit. Ind. V. 685. *Malaxis miniata,* Rchb. f. Walp. Ann. VI. 215.

- Singapore: (Hort. Loddiges). Kranji (Ridley 375, 2034a). Endemic.

13. O. PORPHYROCHILA, Ridl., Journ. Linn. Soc. XXXII. 220. Stem rather short. Leaves lorate acuminate flaccid falcate, 6 inches long ½ inch wide. Spike over 4 inches long slender, almost entirely floriferous, rachis angled. Flowers $\frac{1}{20}$ inches across crowded below fascicled towards the apex. Bracts linear acute entire. Sepals short ovate obtuse yellow. Petals linear much narrower. Lip ovate purple with long crenulate recurved auricles, median lobe bilobed toothed.

Selangor: Bukit Hitam (Kelsall). Endemic.

14. O. BERTOLDI, King, Journ. As. Soc. Bengal LXVI, II. 581. Stems very short. Leaves coriaceous narrowly lanceolate acuminate. ½-1½ inch long ⅕ to ¼ inch wide. Spike longer than the leaves, base long ebracteate slender. Flowers $\frac{1}{20}$ inch long in whorls of 6. Bract lanceolate erose-serrate. Sepals elliptic oblong entire. Petals lanceolate coarsely serrate. Lip longer ovate elliptic not lobed with one or two teeth on the sides, apex bifid toothed. Perak (Scortechini 1525). Endemic.

15. O. CILIOLATA, Hook. f. Fl. Brit. Ind. VI. p. 181, Ic. pl. 2318. Stems tufted 3-6 inches long. Leaves about 9-14 ensiform acute ¾ to 2 inches long ¼ inch wide. Spike 4 to 6 inches long, floriferous to the base. Flowers $\frac{1}{20}$ inch wide, white, whorled. Bracts oblong denticulate apiculate. Sepals ovate, ciliate. Petals lanceolate minutely denticulate ciliate. Lip oblong quadrate or ovate retuse serrate. Capsule $\frac{1}{16}$ inch across pedicellate puberulous.

Singapore: Kranji (Ridley 375), Changi, Bukit Timah Road (8788, 10153); Malacca: Sungei Kesang, Sungei Rambei (Derry 313); Tringanu: Bundi (Rostado). Distrib. Borneo.

16. O. BRUNNESCENS, Ridley, Journ. Linn. Soc. Stem an inch long. Leaves cultrate falcate ¾ inch long ⅛ inch wide. Spike 4 inches long slender base nude. Flowers scattered $\frac{1}{20}$ inch across, reddish brown. Bracts ovate acute. Sepals ovate oblong entire. Petals broad ovate denticulate. Lip ovate laciniate not lobed. Capsule ellipsoid pyriform ⅛ inch long.

Perak: Larut Hills (Ridley). Endemic.

17. O. INTERMEDIA, King, Journ. As. Soc. Beng. LXVI. II. 579. Stem 1 to 3½ inch long. Leaves acute subfalcate 1 to 2½ inch long, ⅛ to $\frac{1}{20}$ inch broad. Spike slender decurved about 4½ inches long. Flowers $\frac{1}{20}$ inch long whorled. Bract lanceolate shorter than the ovary. Sepals ovate acute. Petals linear oblong acute. Lip 3 lobed larger than the sepals, broadly oblong, lateral lobes rounded apex broad and erose.

Perak (Scortechini 1516). Endemic.

18. O. GRACILIS, Hook. fil. Fl. Brit. Ind. V. 685. Stems 6 to 8 inches long flexuous. Leaves straight lanceolate acute one inch long. Spike 4-6 inches long, low flowered. Flowers subsessile reddish $\frac{1}{10}$ inch across. Bracts very short triangular ovate. Dorsal sepal orbicular, laterals ovate. Petals linear. Lip with two oblong cylindric obtuse lateral lobes, midlobe quadrate flat obtusely 2 lobed.

Perak: Kinta River (King's Collector). Endemic.

19. O. CAUDATA, King, Journ. As. Soc. Bengal LXVI. II. p. 581. Stems an inch and a half long. Leaves 4 or 5 distant, linear ensiform acuminate falcate $\frac{3}{4}$ to 2 inches long $\frac{3}{20}$ inch broad. Spike much decurved, as long as the longest leaf, lax-flowered. Flowers solitary about $\frac{1}{20}$ inch long. Bract ovate entire. Sepals ovate oblong acute pale red. Petals linear lanceolate acuminate. Lip much longer, lateral lobes ovate acuminate spreading, midlobe narrow deeply divided into 2 caudate acuminate lobules.

Perak (Scortechini 315b). Endemic.

20. O. ROLFEANA, King, Journ. As. Soc. Bengal LXVI. II. 581. long and about $\frac{1}{4}$ inch wide. Spike 3 or 4 times as long as the leaves Stems about an inch long. Leaves ensiform acute falcate $\frac{2}{3}$ to 1 inch slender puberulous rather sparsely flowered. Bract oblong edges erose. Ovary glandular hairy stalked. Flowers $\frac{1}{20}$ inch orange coloured. Sepals subequal ovate obtuse. Petals linear entire. Lip longer base broad and concave, lateral lobes rounded erect, midlobed narrow shortly bilobed at the apex, edges entire.

Perak (Scortechini 2193). Endemic.

3. LIPARIS, Richard.

Terrestrial or epiphytic plants. Stems usually swollen at base. Leaves herbaceous (terrestrial species) or coriaceous (epiphytes) ovate or lanceolate few. Raceme erect, flowers numerous small, or very small. Sepals and petals narrow linear or oblong. Lip clawed, blade oblong, ovate or reniform, deflexed with a single or double callus at the base. Column long graceful, free with short arms or wings. Anther terminal ovate. Pollinia 4. Species over 100. All temperate and topical regions.

§ 1. MOLLIFOLIAE, terrestrial, leaves herbaceous one or more on a swollen stem not articulated.

Leaves several.

Lip large oblong, denticulate, flowers deep red	1. *L. atrosanguinea.*
Lip large ovate, pale veined red	2. *L. venosa.*

Lip small oblong entire, calli 2 — 3. *L. ferruginea.*
Lip small obovate crenulate, callus 1 .. .. — 4. *L. transtillata.*
Lip small apex denticulate bifid — 5. *L. Wrayi.*

Leaves solitary ovate.
Lip oblong bifid denticulate .. — 6. *L. Maingayi.*
Lip pandurate bifid with two long tails .. .. — 7. *L. parvula.*
Lip pandurate bifid lobes fimbriate — 8. *L. furcata.*

§ 2. Coriifoliae, epiphytic, leaves coriaceous articulate. Raceme lax bracts deflexed.
Flowers large, lip bilobed, toothed — 9. *L. latifolia.*
Flowers small, lip apex pectinate .. — 10. *L. lacerata.*
Flowers very small.
Lip oblong retuse .. .. — 11. *L. elegans.*
Lip oblong bilobed .. .. — 12. *L. flaccida.*
Lip entire ovate .. .. .. — 13. *L. longipes.*
Lip entire oblong .. .. — 14. *L. comosa.*

§ 3. Distichiae, epiphytic, leaves coriaceous articulate. Raceme short compact. Bracts distichous persistent.
Lip half an inch long, connate, flabelliform .. .. — 15. *L. compressa.*
Lip ¼ inch long obovate retuse .. — 16. *L. disticha.*

§ 1. Mollifoliae.

1. L. atrosanguinea, Ridl., Journ. As. Soc. Str. Br. Vol. 39, p. 71. Stem stout sheathed 4 inches tall. Leaves ovate lanceolate acute crisped, 8 inches long by 3 inches wide or less. Scape stout over a foot tall. Raceme lax many flowered. Bracts very small, ovate lanceolate, ovary and pedicel 1 inch long, twisted and the ovary with sinuate ribs. Flowers as large as those of *L. venosa* entirely deep red-purple. Sepals linear obtuse revolute. Petals much narrower. Lip orbicular oblong ½ inch long subacute denticulate with two short semicircular lamellae at the base. Column arched with narrow wings.

Perak: Gap on Larut Hills 4,000 feet alt. (Curtis and Derry).

Allied to *L. venosa* but differing in the broader lip, and deeper colouring of the flower. Endemic.

2. L. venosa, Ridl., Journ. Linn. Soc. XXIV. (1888) 350. Stem swollen about 2 inches long, old pseudobulb 6 inches green or purple. Leaves about five unequal ovate lanceolate undulate acute 6 inches long by 2 inches wide. Scape stout purple red over a foot long.

Raceme lax many flowered. Bracts lanceolate acute deflexed ⅛ inch long. Pedicels 1 inch long purple. Flowers large. Sepals oblong convolute ¾ inch long pinkish or green. Petals nearly as long linear pink. Lip ovate obtuse crenulate over half an inch long and as broad, pale with purple veins, calli small rounded. Column rather short nearly straight and thick with raised edges, no arms, purple. Anther ovate purple.

Singapore: Chan Chu Kang (Ridley); Johor (Little); Perak: Bujong Malacca, (Curtis 3289). Distrib. Sumatra, Borneo.

3. L. FERRUGINEA, Lindl., Gard. Chron. 1848, p. 55. Stem swollen at the base short. Leaves narrow linear lanceolate acuminate 8 to 9 inches long by ½ to 1 inch wide. Raceme 12 to 16 inches tall stout base nude, flowers small ¼ inch long, scattered in the upper third. Bracts lanceolate acuminate. Sepals oblong ovate laterals falcate obtuse. Petals linear narrow, all green or purple. Lip fleshy hardly clawed, oblong retuse, green or purple calli two small bosses at the base. Column arched rather stout arms very obscure, greenish. Anther ovate. Capsule pearshaped an inch long on a pedicel ¼ inch long.

L. nervosa, Ridley, Journ. Linn. Soc. XXXII. 224. Damp grassy spots, ricefields, etc. Singapore: Tanglin, Changi (Ridley); Malacca: (Griffith), Chabau (Ridley); Perak: Larut (King's Collector 2782), Kampar (Curtis 3108). Distrib. Cambodia.

Probably only a local form of *L. nervosa,* Lindl., differing mainly in its narrow elongate leaves, and long flowerspike.

4. L. TRANSTILLATA, Ridl., Journ. Linn. Soc. XXXII. 225. Stem an inch and a half long swollen. Leaves about 4 ovate to ovate lanceolate acute oblique 8 nerved petioles 2 inches long stout blade 6 inches long and two wide. Raceme 6 inches long rachis winged, base nude. Flowers ½ an inch across reversed, pedicels ⅜ inch long purple. Sepals lorate purplish. Petals linear narrower. Lip clawed, blade oblong obovate slightly retuse, and crenulate dark purple, with a median olive green channel, callus a transverse bar green with two purple spots, at the base of the blade. Column nearly straight apex hooded yellowish white, arms small oblong truncate.

Perak: Larut Hills (Ridley). Endemic.

5. L. WRAYI, Hook. f. Fl. Brit. Ind. VI. p. 181. Stem 3-4½ inches long purple. Leaves 5 lower ones ovate, upper ones lanceolate acute undulate bright green six inches long three inches wide or smaller. Raceme stout 6 inches long 3 angled. Bracts ovate acute lanceate undulate ⅛ inch long. Pedicels and ovaries slender ½ inch long. Sepals linear obtuse convolute ⅜ inch long. Petals narrowly linear shorter all green. Lip oblong apex widely square bilobed, lobes

toothed, green with two purple lines on the disc, no calli. Column gaceful curved green. Capsule elliptic nearly an inch long. *L. pectinifera,* Ridl., Journ. Bot. Vol. 39, p. 210.

Perak: (Wray 3713, 3631); Dindings on Gunong Tungul (Ridley). Endemic.

6. L. MAINGAYI, Ridl., Journ. Linn. Soc. XXXII. 226. Stem short base swollen subglobose. Leaves lower ones reduced to sheaths, upper one orbicular ovate dark green 3 inches long by 2 inches wide. Raceme about 4 inches lax. Bracts lanceolate acuminate half as long as the pedicel. Pedicel half an inch long. Flowers ¼ inch long deep crimson. Sepals narrow lanceolate acute. Petals narrower. Lip Column fairly stout arched, arms short incurved.

Microstylis Maingayi, Hook. f. Ic. Pl. t. 1826, Fl. Brit. Ind. V. p. 689. Wet rock in forest from 2,000 feet elevation upwards.

Malacca: Mount Ophir (Ridley); Perak: Larut Hills (Wray 674), Gunong Batu Puteh (Wray 487); Penang: Waterfall Hill (Maingay), Bukit Laksamana (Curtis 1095); Kedah: Gunong Jerai (Ridley); Selangor: Pahang Track (Ridley). Endemic.

7. L. PARVULA, Ridl. l.c.c. Stem short subglobose. Leaves lower ones reduced to sheaths, upper one ovate acute dark green 2 inches long by one wide. Raceme 3 inches base nude. Bracts lanceolate acuminate very small. Flowers rather crowded about ⅛ inch long deep crimson. Sepals oblong obtuse. Petals narrow. Lip narrow pandurate ending in two narrow tails with a broad sinus between.

Micostylis parvula, Hook. f. Ic. Pl. t. 1827, Fl. Brit. Ind. V. 690. Wet rocks, at an altitude of 2,000 feet and upwards.

Perak: Larut Hills (King's Collector 6457, Ridley 5203). Endemic.

8. L. FURCATA, Ridl., Journ. Linn. Soc. l.c.c. Stem very small subglobose. Lower leaves reduced to sheaths, upper one ovate acute 2 inches long by one wide. Raceme very slender 4 to 6 inches long base about one third nude. Flowers numerous very small ⅛ inch long. Bracts much shorter than the pedicel lanceolate acute. Pedicel slender ⅛ inch long. Sepals oblong obtuse. Petals linear lorate. Lip not clawed narrow oblong much longer than the sepals, bifid, lobes diverging toothed, with a median tooth. Capsule elliptic ¼ inch long.

Microstylis furcata, Hook. f. Ic. Pl. 1827 A.

Perak: Larut Hills 4,000 feet alt (Ridley), Scortechini 370b. Endemic.

§ 2. CORIIFOLIAE.

9. L. LATIFOLIA, Lindl., Gen. and Sp. Orch. Pl. p. 30. Stem stout 3 inches long. Leaf solitary elliptic lanceolate very coriaceous

with about 14 strong ribs 12 inches long 3 inches wide. Raceme 10 to 14 inches long stout. Flowers numerous ½ inch long. Bracts lanceolate acuminate ¼ inch long. Pedicel ½ inch long. Sepals narrow linear. Petals similar narrower yellowish. Lip base narrow apex dilated bilobed denticulate, orange, calli two short erect processes. Column slender arched arms very short. Anther orbicular. Capsule 1 inch long obconic. *L. robusta,* Hook. f. Ic. Pl. 2012. *L. Scortechini,* Hook. f. Fl. Brit. Ind. V. 703, Ic. Pl. No. 2009. *Malaxis latifolia,* Blume, Bijdr. 393. Epiphyte at an altitude of 4,000 to 5,000 feet.

Selangor: Bukit Hitam (Kelsall); Perak: Larut Hills (Scortechini, Ridley). Distrib. Java, Borneo.

10. L. LACERATA, Ridl., Journ. Linn. Soc. XXII. 1886, p. 284. Pseudobulb conic 2 inches long ½ inch thick. Leaf lanceolate to elliptic lanceolate 6 to 9 inches long ¾ to 1½ inch wide much narrowed at the base. Raceme slender 6 to 12 inches long. Flowers numerous distant ¼ inch long. Bracts narrowly lanceolate acuminate ⅛ inch long. Pedicels and ovary ½ inch long. Sepals oblong obtuse. Petals narrower and shorter white. Lip oblong apex broad strongly toothed, callus obscure single, orange coloured. Column arched, arms very obscure. Capsule elliptic half an inch long. Hook. f. Fl. Brit. Ind. V. 702.

Perak: (Scortechini, King's Collector), Larut Hills (Ridley); Lankawi Isles, Gunong Raya (Curtis). Distrib. Tenasserim, Borneo.

11. L. ELEGANS, Lindl., Gen. and Sp. Orch. Pl. p. 30. Pseudobulb conic cylindric 1 inch long. Leaves 2 elliptic lanceolate narrowed at the base 6 to 9 inches long 1-1¼ wide. Raceme 12 to 18 inches long erect stiff base nude. Flowers very numerous small one-tenth inch long. Bracts lanceolate acute ⅛ inch. Sepals oblong, laterals curved, blunt green. Petals narrower green. Lip oblong retuse decurved orange calli 2. Column graceful arched, wings rounded, green. Capsule elliptic ¼ inch long. *L. gracilis,* Hook. f. Ic. Pl. t. 2011, Fl. Brit. Ind. VI. 182. Epiphyte on trees and rocks, common.

Singapore: Kranji, Sungei Buluh (Ridley 2372); Johor: Gunong Baneng (Ridley); Malacca: Nyalas (Goodenough 1715), Ophir (Derry); Pahang: Pekan (Ridley); Perak: Larut (King's Collector 7283); Penang: Moniot's Road (Curtis 2811); Lankawi: Kwala Malacca (Curtis 1695); Kedah: Gunong Jerai (Ridley). Distrib. Borneo.

12. L. FLACCIDA, Rchb. f. Linnaea XII. (1877) 45. Pseudobulb subcylindric 1½ to 3 inches long. Leaves narrow elongate lanceolate acute 6 to 12 inches long ¼ to ⅜ inch wide. Raceme slender decurved 6-12 inches long, flowers very small scattered copious. Bracts ⅛ inch

long lanceolate acute. Pedicel and ovary ¼ inch long. Sepals oblong, laterals falcate obtuse greenish white. Petals narrower and shorter. Lip oblong abruptly decurved in the middle apex bifid, edges ciliate, orange, calli 2 small processes. Column graceful arched, arms very short rounded. Capsule elliptic ½ inch long. On lofty trees.

Malacca: Machap (Derry 160); Selangor: Goa Batu (Ridley 8132); Perak: Ulu Bubong (King's Collector 10402). Distrib. Sumatra, Java, Borneo, Siam.

13. L. LONGIPES, Lindl., Wall. Pl. As. Rar. I. 31. t. 35, Gen. and Sp. Orch. 40. Pseudobulb short ovoid, 1-2 inches long or elongate to 6 inches, cylindric, leaves linear obovate oblong subspathulate obtuse or acute, 4-8 inches long 1 inch wide. Raceme erect about 6 inches long. Flowers copious crowded in the upper part, very small. Bracts linear acuminate ⅛ inch long. Sepals oblong greenish white. Petals linear. Lip ovate acute decurved in the middle orange or green, no calli. Column graceful curved with short arms. Wt. Icones t. 906. *L. pendula,* Lindl. Bot. Reg. 1838, Misc. 180. *L. spathulata,* Lindl., Bot. Reg. 1842. Rare.

Perak: Larut Hills (Derry), Batang Padang (Wray 1440); Penang: Sonkay River (Curtis 507) (Porter in Wallich's Catalogue 1943). Distrib. India, Ceylon, Malay and Pacific Isles, China.

14. L. COMOSA, Ridley, Journ. Linn. Soc. XXXII. 229. A small plant with crowded conical pseudobulbs ⅜ inch long. Leaves narrowly lanceolate acute narrowed to the base 4½ inch long ¼ inch wide. Raceme erect 6 inches long. Flowers small numerous green. Sepals lanceolate lorate, laterals broader. Petals linear. Lip oblong subquadrate apex rounded, no calli. Column slightly arched above, arms short obscure. Capsule ellipsoid subglobose ⅛ inch long.

Perak: Larut Hills at 1,500 feet altitude (Curtis). Endemic.

§ 3. DISTICHAE.

15. L. COMPRESSA, Lidl., Gen. and Sp. Orch. Pl. p. 32. Rhizome creeping, pseudobulbs subglobose at base covered with the sheath of the leaf. Leaf solitary coriaceous linear lanceolate acute, 9-15 inches long 1 inch wide. Bracts distichous imbricating. Flowers opening singly red brown. Pedicels ½ inch long. Sepals lanceolate. Petals narrow linear. Lip half an inch long, cuneate flabelliform with a narrow claw, apex broad truncate crenulate. Calli 2. Column slender curved, no arms. Hook. f. Fl. Brit. Ind. V. 706, Ridley Journ. Linn. Soc. XXII. 291. *Malaxis compressa,* Bl. Bijdr. 390, t. 54.

Perak: Larut Hills at 4,000 feet (Curtis 2069), Scortechini 1420, Gunong Batu Putih (Wray 1244). Distrib. Sumatra, Java, Borneo, Celebes.

16. L. DISTICHA, Lindl., Bot. Reg. sub. t. 882. Rhizome long and slender branched pseudobulbs pear-shaped ¼ inch long. Leaf linear acute 5 to 10 inches long ¼ inch wide or less. Scape slender naked, winged 4 to 6 inches long raceme ½ to ¾ inch long. Bracts ⅛-¼ inch long, distichous. Flowers ½ inch. Sepal oblong narrow yellowish. Petals linear. Lip ¼ inch long ocre yellow, obovate retuse, with 2 tubercled calli at base. Column slightly curved broadly winged. Hook. f. Fl. Brit. Ind. V. 706, Ridley Journ. Linn. Soc. XXII. 291. *L. gregaria,* Lindl., Gen. and Sp. Orch. Pl. 33. *L. mucronata,* Lindl., Ic. 32. *Malaxis disticha,* Thouars. Orch. Iles. Austr. d'Afrique t. 82. *Malaxis mucronata,* Bl. Bijdr. 391.

Singapore: Kranji (Ridley 172), Sungei Buloh (Ridley 2373); Johor: Kwala Kahang, (Kelsall); Pahang: Kota Glanggi (Ridley); Perak (Scortechini 1559), Bujong Malacca (Ridley 9284), Larut (King's Collector 4986), Kinta (King's Collector 7085); Penang: (Maingay); Lankawi (Curtis). Distrib. Mascarene Isles, Ceylon, Tenasserim, Malay Archipelago.

4. PLATYCLINIS, Benth.

Tufted epiphytes with numerous obconic pseudobulbs crowded on a rhizome. Leaves solitary petioled lanceolate or linear. Bracts stiff terminal slender. Flowers small green white or brown. Bracts stiff broad convolute or narrow. Sepals and petals narrow spreading. Lip sessile or nearly so flat oblong, or pandurate, lobes small, calli various. Column slender or short and broad, with distinct often long arms, tip of column produced into a hood. Anther incumbent 2 celled. Pollinia 4 waxy ovoid.

Species about 20. Malay Peninsula and Islands.

Bracts broad	1. *P. longifolia.*
Bracts narrow, arms of column long from the middle	2. *P. gracilis.*
Arms rising from near the base.	
Arms much shorter than the column	3. *P. linearifolia.*
Arms about as long acuminate ..	4. *P. linearis.*
Arms about as long toothed ..	5. *P. odorata.*
Column and arms very short.	
Arms from near the stigma ..	6. *P. Kingii.*
Arms oblong toothed at base ..	7. *P. Sarawakensis.*

1. PL. LONGIFOLIA, Hemsl. Gard. Chron. (1881) II. p. 656. Pseudobulbs crowded in a large clump, elongate conic 3-4 inches long. Leaf lanceolate petiolate acuminate 6-13 inches long 1-2½ inches wide petiolate 2-4 inches long. Raceme 12 to 15 inches long base nude for about half its length. Bracts oblong convolute ⅓ inch long as long as

the pedicel and ovary. Flowers about 40. ¼ inch across. Sepals and petals lanceolate acute, the latter a little narrow ochreous. Lip pandurate with shorter narrow acute spreading lateral lobes, midlobe much larger obovate oblong, centre dark brown edges lighter, keels 2 low ridges brown. Column pale comparatively short arched, arms long and linear from about the middle, erect, hood toothed. Anther conic capsule globose oblong about an inch long splitting into 3 equal lobes. *Dendrochilum longifolium,* Rchb. fil. Bonplandia IV. (1856) p. 329.

Singapore: Kranji, Sungei Jurong (Ridley 4681); Johor: Batu Pahat (Ridley); Pahang: Selinsing (Machado); Peak: Hermitage Hill (Ridley). Distrib. Borneo.

2. Pl. gracilis, Hook. f. Fl. Brit. Ind. V. p. 708, Ic. Pl. t. 2016. Pseudobulbs crowded one inch long conic. Leaf ellipic lanceolate obtuse 4 to 6 inches long one inch wide petiole ½-1 inch long. Raceme graceful 6 to 9 inches long lower third nude. Flowers numerous small. Bracts lanceolate acute ⅛ inch long. Sepals and petals lanceolate acuminate acute, pale green. Lip pandurate lateral lobes narrow linear acuminate pale greenish white, median obovate, or cuneate acuminate white with a dull red centre bar and a green line in the centre, or yellowish with a dark brown central patch, keels 3 thick from the base to the middle of the lip, dark green. Column slender curved, arms from about half way down the column long Capsule elliptic, ½ inch long.

Perak: Larut Hills, at 4-5000 feet. (King's Collector 280) (Curtis, etc.).

Var. *angustifolia.* Leaves narrow linear obtuse, 5 inches long by ⅜ inch wide.

Perak: Bujong Malacca (Ridley 9816). Endemic.

3. Pl. linearifolia, Ridl., Journ. Linn. Soc. XXXII. 231. Pseudobulbs fusiform conic ½ inch long densely crowded. Leaf linear lanceolate 2 inches long by ¼ inch wide petiole ½ inch long. Raceme slender nodding 3 inches long a third to a half nude. Flowers ⅛ inch long about 20 yellowish. Bracts longer than the ovary lanceolate acute. Sepals and petals lanceolate acuminate. Lip oblong or obovate, lateral lobes short triangular acute, median ovate oblong, or subquadrate subacute keels three. Column curved, arms linear rising from near the base much shorter, hood round entire. Anther ovate.

Dendrochilum linearifolium, Hook. fil. Fl. Brit. Ind. V. 782, Ic. Pl. t. 1859.

Malacca: Mt. Ophir at 3-4,000 feet alt., (Hullett 862, Derry 626); Perak: Batang Padang (Wray), Chosang (Scortechini), Gunong Bubu (Wray 3884). Endemic.

4. Pl. linearis, Ridl., Journ. Linn. Soc. XXXII. 230. Rhizome thick woody, pseudobulbs elongate conic 1½ inch long. Leaf over a foot long ½ inch wide linear lanceolate obtuse narrowed at the base into a petiolate 3 inches long. Raceme 12 inches long graceful, lower two-thirds nude. Flowers ¼ inch long, white. Bracts lanceolate acute shorter than the ovary. Sepals linear acute. Petals similar. Lip linear obtuse as long, side lobes acute hardly distinct, keels three thick, middle one lower than the others. Column long arched arms lanceolate acuminate acute rising from near the column base and projecting about the toothed hood. Anther long beaked.

Kedah: Gunong Jerai, 3-4,000 feet alt. terrestrial. (Ridley 5138). Endemic.

5. Pl. odorata, Ridl., Journ. As. Soc. St. Br. Vol. 39, p. 72. pseudobulbs cylindric tapering 2½ to 3 inches long. Leaf lanceolate subacute petiolate, blade 9 inches long, ¾ inch wide, petiole 2 inches long slender. Raceme nodding graceful 1 foot long, lower half nude slender. Flowers greenish white sweet scented, ¼ inch long numerous. Bracts lanceolate acuminate longer than the short ovary. Sepals and petals lanceolate acuminate acute. Lip entire tongue shaped obtuse minutely pubescent, keels, 2 nearly the whole length of the lip. Column rather short with broad wings arms free from a little below the stigma as long as the hood, linear apex toothed, hood of column large toothed. Anther with a short broad beak.

Perak: (Curtis No. 2854). Endemic.

6. Pl. Kingii, Hook. f. Fl. Brit. Ind. V. p. 708, Ic. Pl. t. 2015. Pseudobulb elliptic oblong, 1 inch long. Leaf lanceolate linear acuminate 6 to 10 inches long, ¼ inch wide tapering much at base. Raceme 9 inches long lower half nude, graceful. Flowers about 24, ¼ inch long, pale green, lip darker. Bracts lanceolate nearly twice as long as the ovary. Sepals lanceolate acute. Petals broader. Lip side lobes rounded broad; midlobe ovate or lanceolate ovate with two short curved calli at the base. Column very short, broad with very short toothed arms from the upper part, hood long entire. Anther ellipsoid, with a rounded process on the tip.

Perak: Larut Hills (King's Collector 7455, Scortechini 608a), (Curtis 2756). Distrib. Borneo.

7. Pl. Sarawakensis, Ridl., Journ. Linn. Soc. XXXI. 267. Pseudobulbs short oblong ¾ inch long. Leaf lanceolate 7 inches long ½ inch wide, petiole 1 inch. Scape 8 inches long slender nodding. Bracts lanceolate acute ribbed. Sepals lanceolate to acute long. Petals lanceolate obtuse greenish yellow. Lip shorter, side lobes subquadrate obscurely toothed midlobe oblong ovate, cuspidate, green, a double raised keel at the base. Column short with a large hood

arms, very short oblong toothed processes at the base. Anther helmet-shaped apiculate.

Perak: (Curtis). Distrib. Borneo.

5. Dendrobium, Sw.

Epiphytes rarely terrestrial. Stems elongate, or pseudobulbous. Leaves coriaceous, herbaceous or fleshy. Flowers racemose axillary or subterminal. Sepals subequal, lateral ones adnate to the foot of the column and forming a sac (mentum). Lip adnate to the foot of the column, side lobes erect or rarely spreading, often absent, terminal lobe longer narrow or broad concave or flat. Rostellum entire. Anther 2 celled scullshaped top thickened, attached by the back to a small tooth, on the tip of the column. Pollinia 4, ovoid, or oblong in pairs in each cell. Capsule elliptic or pyriform.

Species about 300. Tropical Asia to Japan, Australia and Polynesian.

§ 1. Sarcopodium. Stems short pseudobulbous of one or two internodes on a creeping rhizome. Flowers one to several on a terminal raceme.

Pseudobulb slender crowded one-leafed — 1. *D. longicolle.*

Pseudobulbs distant, short and thick, leaves 2.

Lip with two rows of tubercles on midlobe .. .. .. — 2. *D. longipes.*

Lip with three keels on disc and 2 calli on base .. .. .. — 3. *D. macropodum.*

Lip with thickened ridges, no calli — 4. *D. geminatum.*

§ 2. Bolbidium. Stems short, tufted, clavate, leaves 2 terminal. Flowers 1 or few from between the leaves, mentum long.

Stems stipitate .. .. .. — 5. *D. quadrangulare.*

§ 3. Desmotrichum. Stems branched, the terminal internode of each branch developed into an ovoid or conic, pseudobulb bearing a single leaf. Flowers few 1-2 at a time from a tuft of bracts below the leaf.

Terminal lobe of lip not broader than the lateral lobes apex bilobed.

Lip glabrous midlobe oblong base broad .. .. — 6. *D. lonchophyllum.*

Lip midlobe narrowed above horse-shoe shaped .. .. .. — 7. *D. Kelsalli.*

Terminal lobe of lip entire bearded — 8. *D. criniferum.*

Terminal lobe much broader than the side lobes.

Margins waved entire. Oblong	9. *D. Flabellum.*
Triangular, apex broad retuse ..	10. *D. roseo-punctatum.*
Subtriangular almost bilobed ..	11. *D. pallidiflorum.*
Of two long undulate lobes ..	12. *D. bifidum.*
Terminal lobes lacerate or fimbriate	13. *D. laciniosum.*

§ 4. Aporum. Stems flattened with distichous ensiform or triangular short leaves, sheaths equitant persisting. Flowers small white yellow or pink, in very short racemes usually covered with numerous brown bracts, lateral.

*Terminal portion of stem covered with sheaths only.

Flowers very small.

Lip narrow apex bilobed. Flowers white	14. *D. serra.*
Lip narrow apex reniform ..	15. *D. rhodostele.*
Lip apex obovate. Flowers pink	16. *D. rosellum.*

**Stem leafy to the top. Flowers small.

Leaves oblong or lanceolate, not imbricating.

Lip cordate side lobes short blunt, midlobe broad	17. *D. eulophotum.*
Lip side lobes long curved, midlobe shorter	18. *D. rhizophoreti.*
Lip cuneate bilobed. Leaves ½ inch across	19. *D. grande.*

Leaves lanceolate imbricating.

Lip entire oblong spathulate. Bracts numerous	20. *D. atropurpureum.*
Lip entire oblong spathulate. Bracts few	21. *D. sinuatum.*
Side lobes of lip distinct. Bracts very numerous	22. *D. atrorubens.*

Stem leafy to top, leaves short, flowers large.

Stems erect or pendulous, lip oblong entire	23. *D. Leonis.*
Stems prostate rooting	24. *D. prostratum.*
Stems erect, bracts one or two, lip bilobed	25. *D. terminale.*

§ 5. Strongyle. Stems slender not swollen, leaves terete or slightly flattened. Flowers 2 or 3 together from the axils of the leafless terminal portions of the stem, white often veined pink.

straight .. .. 26. *D. teres.*
Stem short 3 inches, leaves ¾ inch long terete erect .. .. 27. *D. flexile.*
Stem 4 inches long, leaves thick terete over a foot long .. .. 28. *D. kentrophyllum.*
Leaves flattened narrow short 29. *D. acerosum.*
Leaves very short numerous recurved .. .. .. 30. *D. subulatum.*

§ 6. Virgatae. Often terrestrial stems slender leafy erect, leaves narrow unequally bilobed. Flowers small in pairs from the upper parts of the sheaths.

Terrestrial, sheaths glabrous when adult .. .. 31. *D. conostalix.*
Sheaths covered with black pubescence .. .. .. 32. *D. villosulum.*
Epiphytic, sheaths short glabrous 33. *D. pachyglossum.*

§ 7. Bambusaefoliae. Epiphytic, stems tall erect or pendulous, covered thickly with linear to ovate lanceolate leaves. Flowers in pairs from an internode, with one or more large ovate bracts, yellow unexpanded. Mentum short curved.

Stems erect, leaves linear lanceolate thin .. .. 34. *D. gemellum.*
Stems pendulous leaves ovate lanceolate fleshy .. .. .. 35. *D. pensile.*

§ 8. Distichophyllae. Stems tufted, rarely scattered on a creeping rhizome, grooved, leafy. Leaves lanceolate bifid, coriaceous or thin. Flowers one or few on axillary racemes mediocre or small, petals and sepals reflexed. Mentum straight, horizontal spur like, lip unusually broad.

Stems tufted.

Lip entire fleshy, flowers small .. 36. *D. bifarium.*
Lip 3-lobed emarginate .. .. 37. *D. Hosei.*
Lip 3-lobed bilobed .. .. 38. *D. revolutum.*
Lip 3-lobed oblong lateral lobes broad .. .. 39. *D. uniflorum,*

Narrow with a long claw, side lobes small .. .. 40. *D. metachilinum.*
Stems weak on a creeping rhizome 41. *D. pandaneti.*

§ 9. Clavatae. Stems with from one to three of the internodes at the base swollen into an ovoid or fusiform pseudobulb, apex of the stem usually leafless. Leaves coriaceous lanceolate or terete slender. Flowers produced singly from the tufts of bracts on the nude portion. Flowers mediocre or small white, or pink. Mentum curved, thick.

Leaves terete.
Stem leafy to top, flowers lateral 42. *D. gracile.*
Stem nude at top bearing the flowers .. .. 43. *D. clavator.*
Leaves flat narrow linear .. .. 44. *D. clavipes.*

Leaves elliptic broad.
Pseudobulb oval flattened of 2 internodes .. .. 45. *D. tuberiferum.*
Pseudobulb fusiform thick of 4 internodes .. .. 46. *D. crumenatum.*

§ 10. Breviflores. Stems stout or slender not swollen. Leaves one or two subterminal. Flowers in short racemes or solitary from internodes below the leaves. Lip short with small obscure side lobes. Mentum short.

Stem clubshaped 4 angled above, flowers solitary .. .. .. 47. *D. cuphlebium.*
Stem subterete stout, flowers in a compact raceme.. .. .. 48. *D. callibotrys.*
Stem slender, flowers few together raceme lax .. .. .. 49. *D. modestum.*

§ 11. Pedilonum. Stems terete very rarely flattened. Leaves lanceolate. Flowers solitary or in lateral racemes on the old leafless stems. Flowers large or small, white, pink or orange. Mentum much longer than the sepals straight or curved. Lip with a linear claw and an ovate or oblong limb.

Stems flattened thin ovoid .. 50. *D. lamellatum.*
Stems long terete.
Flowers very small, raceme dense 51. *D. secundum.*

Flowers mediocre to large, racemes short, few flowers.

Lip narrow spathulate entire, flowers pink .. .. .. 52. *D. cornutum.*
Lip narrow spathulate toothed, flowers pink .. .. .. 53. *D. Aegle.*
Lip short apex rounded toothed, flowers green .. .. .. 54. *D. virescens.*
Lip short apex pandurate entire, striped red .. .. .. 55. *D. serpens.*
Lip large obovate, flowers orange 56. *D. crocatum.*
Lip obovate truncate, buff and white .. .. 57. *D. Derryi.*
Lip large obovate, flowers white.
Lip apex entire .. .. .. 58. *D. hymenopterum.*
Lip apex bilobed .. .. .. 59. *D. Calicopis.*
Lip blade quadrate crenulate .. 60. *D. roseatum.*
Lip blade abruptly pandurate bilobed .. .. 61. *D. Foxii.*
Lip 3-lobed flowers small .. .. 62. *D. tropaeoliflorum.*
Lip 3-lobed broad, no callus.
Lip 3-lobed, leaves broad .. .. 63. *D. megaceras.*
Lip 3-lobed, leaves narrow .. 64. *D. tenuicauli.*
Lip 3-lobed, callus spur-like.
Midlobe entire .. .. .. 65. *D. kentrochilum.*
Midlobe retuse .. .. .. 66. *D. sanguinolentum.*

§ 12. Eudendrobium. Stems tufted long stout or slender, clavate or nodose. Leaves various. Flowers in short racemes on the old leafless stems. Lip short broad often convolute. Mentum very short.

This group nearly includes all species not in any other section. It is very poorly represented in this region.

Stems terete. Flowers small.
Lip narrow three lobed .. .. 67. *D. flavidulum.*
Lip narrow lanceolate entire .. 68. *D. viridicatum.*
Lip boat-shaped .. .. .. 69. *D. hercoglossum.*
Stems terete. Flowers large.
Lip ovate lanceolate, flowers yellow 70. *D. aureum.*
Stem terete, flowers large.
Flowers purple .. .. .. 71. *D. superbum.*
Flowers yellow, purple centre .. 72. *D. Dalhousieanum.*
Stem fusiform, leaf solitary .. .. 73. *D. aggregatum.*

§ 1. Sarcopodium.

1. D. longicolle, Lindl., Bot. Reg. 1840, Misc. 127. Rhizome short creeping branched, pseudobulbs densely crowded flattened club-shaped 4 to 8 inches long, ⅜ inch through at the base, with a few large brown sheaths at the base. Leaf solitary subterminal lanceolate unequally bilobed 5 inches long one inch wide dark green. Flowers solitary with a long slender pedicel 3 inches long, on a very short rachis. Bracts brown lanceolate acute an inch long. Sepals lanceolate caudate 1½ inch long ¼ inch wide, yellow with dark red tips. Petals similar smaller. Mentum ¼ inch long obtuse. Lip three lobed yellow, lateral lobes erect falcate acute ¼ inch long midlobe much longer pandurate, base narrowed, apex suddenly dilate cordate edges crisped, lobulate nerves elevate reticulate, keels 2 straight at the base flexuous on the midlobe. Column thick yellow. Rchb. fil. Walp. Ann. VI. 302. Hook. fil. Fl. Ind. V. 712.

Singapore: (Cuming) Sungei Morai, on tree stumps and the ground in large masses rare (Ridley). Distrib. Borneo.

2. D. longipes, Hook. fil. Fl. Brit. Ind. V. 713. Ic. Pl. 2017. Rhizome stout, pseudobulbs obpyramidal 1-1¼ inch long, covered with brown sheaths. Leaves 2 elliptic oblong lanceolate, 1½-3 inches long sessile or shortly petioled stiffly coriaceous. Raceme 6 to 8 inches long base quite nude, 3-5 flowered. Bracts lanceolate small. Flowers 1¼ to 1¾ inch across, with red veins, pedicel stout, with ovary 1½ inch long. Sepals linear or oblong lanceolate subacute 1 inch long. Mentum conic short blunt. Laterals falcate. Lip as long as sepals ovate oblong three lobed, side lobes rounded subacute or blunt, midlobe ovate or lanceolate mealy with a few tubercles in two rows on the disc. Column rather long, arms very obscure. Anther quadrate umbonate.

Perak: (Scortechini 417b) Ulu Batang Padang (Wray 1616), Gunong Batu Puteh (Wray 889); Selangor, at the Gap (Curtis). Endemic.

3. D. macropodum, Hook. fil. Fl. Brit. Ind. V 713. Ic. Pl. 2020. Stem stout covered with sheaths, pseudobulbs conic deeply sulcate 2 inches long. Leaves 2 short elliptic obtuse thickly coriaceous 2-3 inches long. Racemes 6 to 8 inches tall about 6-flowered. Bracts ovate lanceolate. Ovary with the very short pedicel 2 inches long. Flowers 1½ inch wide. Sepals lanceolate acuminate, mentum very short. Petals linear acute. Lip three lobed, side lobes rounded obtuse midlobe orbicular, keels 3 on the disc and two ear-shaped calli at the base. Column rather long, foot short, arms very obscure. Anther conic. Capsule fusiform.

Perak: (Scortechini) Larut Hills 5,000 feet alt. (Ridley); Pahang: Kluang Terbang (Barnes).

4. D. GEMINATUM, Hook. fil. Fl. Brit. Ind. V. 713. Rhizome very long ascending dark purple, over two feet long, pseudobulbs distant, old ones conic 5 angled, 1-1½ inch long, ½ inch through deep red or reddish yellow shining. Leaves 2 stiffly coriaceous lanceolate obtuse or elliptic oblong 1½-3 inches long, ¼-¾ inch wide. Flowers in terminal panicles of few branches, little longer than the leaves, 3 to 4 inches long, red. Bracts lanceolate acute ¼ inch long. Pedicel and ovary ¾ inch long pink. Sepals lanceolate acute reddish yellow ¾ inch long, narrow. Petals much narrower pale yellow. Lip ½ inch long side lobes broad rounded embracing the column, chrome yellow, midlobe narrow acuminate with an orange red blotch at the base, 2 thick blunt short ridges with a groove between them at the base continued into three elevated veins. Column short thick white edges winged. Anther stipitate, conic. Pollinia 4 oblong pyriform.

Perak: (King's Collector 8011) Larut Hills at 5,000 feet alt. (Curtis 2067) (Derry); Kedah, Gunong Jerai (Ridley). Distrib. Java.

§ 2. BOLBIDIUM.

5. D. QUADRANGULARE, Par. Hook. fil. Fl. Brit. Ind. V. 714. Pseudobulbs tufted cylindric or dilated upwards 2 inches long yellow. Leaves at the top two, lanceolate obtuse or elliptic apics bilobed 1¼ inch long, ⅓ inch wide. Flowers one or two small from a tuft of bracts terminal, pedicels ½ inch long. Upper sepal ovate lanceolate acute, laterals ovate, mentum obtuse curved as long as the ovary. Petals narrower linear. All pale straw colour, or veined with red. Lip oblong entire yellow with red edges or red veined, apex dilated denticulate retuse with rounded orange process in the centre. Column broad, narrowed at the base, arms short erect. Anther conic. Griffith Notulae, III. 315, Lindl. Journ. Linn. Soc. III. 6.

Singapore: Kranji, Seletar (Ridley); Johor: Kuala Sembrong (Kelsall), Batu Pahat (Ridley); Pahang: Pekan (Ridley); Selangor: Kajang, Bukit Kupayiang (Cantley's Coll.); Perak: (Scortechini); Taipeng (Curtis); Penang: Pulau Tikus (Curtis); Trenganu: (Rostado). Distrib.. Burma, Borneo and adjacent islands. On orchard trees. "Sakat Kalumbai" used in cases of dropsy.

§ 3. DESMOTRICHUM.

6. D. LONCHOPHYLLUM, Hook. fil. Fl. Brit. Ind. V. 714. Ic. Pl. t. 2018. Stems numerous much branched 6 inches to a foot tall, pseudobulbs fusiform cylindric, 2 inches long. Leaf lanceolate coriaceous 2-3 inches long ¾-½ wide. Flowers one or two from an excavation in the pseudobulb ½ inch long. Upper sepal ovate lanceolate blunt yellowish with 5 pink stripes, laterals triangular striped pink. Mentum

rather long. Lip spathulate apex bilobed lobes blunt, base and disc deep cimson apex yellow with three raised keels on the disc. Column short, arms blunt shorter than the quadrate anther.

Singapore: Sungei Buluh, Kranji (Ridley); Johor: Tana Runto (Ridley 2379); Pahang: Tahan River (Ridley); Perak: (Scortechini); Kedah: Gunong Jerai (Ridley). Distrib. Rhio.

7. D. KELSALLI, Ridl., Journ. Linn. Soc. XXXII. 237. Stems numerous slender branched 15 inches long, pseudobulbs fusiform not flattened 1 inch long, $\frac{1}{8}$ inch through. Leaves lanceolate subobtuse $1\frac{1}{2}$ inch long $\frac{1}{4}$ inch wide. Flowers half an inch across. Upper sepal ovate obtuse, laterals much larger ovate obtuse, mentum large blunt dilate in the middle. Petals lorate smaller pale green. Lip side lobes broad obtuse erect, greenish, disc crimson purple with three equal keels, midlobe horse-shoe-shaped bilobed, orange. Column greenish.

Pahang: Pulau Aor (Feilding) Kluang Terbang (Barnes 10935); Malacca: Mt. Ophir (R. Derry 628) (Ridley 2145); Perak: Larut Hills (Ridley), Kedah Peak (Ridley). Endemic.

8. D. CRINIFERUM, Lindl., Bot. Reg. Misc. 41. A large tufted plant with numerous stems 2 feet tall, pseudobulbs narrow linear oblong 2 inches long $\frac{1}{4}$ inch through flattened. Leaves elliptic, or ovate elliptic blunt 3 inches long and as wide. Raceme $\frac{1}{4}$ inch long covered with brown bracts. Flowers in pairs, pedicel and ovary $\frac{3}{4}$ inch long. Sepals $\frac{3}{8}$ inch long spreading lanceolate acute pale yellow. Mentum very short and broad, spotted with purple. Petals shorter linear yellow. Lip as long as the sepals, side lobes falcate acute pale yellow, with crimson lines, disc yellow or spotted purple, keels 2 crimson running straight to the midlobe and there sinuous, midlobe linear margins waved, apex covered with yellow filaments. Column short thick white spotted purple. Rchb. fil. Walp. Ann. VI. p. 303. Ridl. Journ. Linn. Soc. XXXII. 238. *D. comatum* Lindl. Gen. and Sp. Orch. Pl. p. 76. *D. zollingerianum* Teysm. and Binn. Tijdschr. Nederl. Ind. XXIV. p. 313.

Singapore: Kranji (Ridley 3929), Changi (Ridley 2031); Johor: Batu Pahat. Distrib. Rhio and Java.

9. D. FLABELLUM, Rchb. fil. Xenia Orch. II. p. 75. t. 118. Large tufted plant, stems thick smooth, pseudobulbs ovate flattened olive or purplish 4 inches long, one inch wide, $\frac{1}{2}$ inch thick. Leaf ovate or ovate lanceolate to lanceolate obtuse dark green 5 to 6 inches long 2 inches wide. Flowers an inch across, pedicel $\frac{1}{2}$ inch long. Bracts 2 ovate lanceolate soon broken up into fibres. Sepals lanceolate acute recurved, mentum as long conic subacute. Petals linear much narrower. All cream coloured with pink spots. Lip base linear, side lobes narrow acute straw color with rosy tips, midlobe pandurate oblong, sides plicate, pale yellow, keels three, two thick wavy on the

midlobe, median one shorter straight. Column channelled in front. *D. Kunstleri* Hook. fil. Fl. Brit. Ind. V. p. 714. Ridley Journ. Linn. Soc. XXXII. 239.

Singapore: Kranji, Changi (Ridley 1789); Johor: Batu Pahat (Lake and Kelsall); Perak: (Scortechini) Larut (King's Collector 6897). Distrib. Siam, Borneo.

10. D. ROSEO-PUNCTATUM, Ridley Journ. Linn. Soc. XXXII. 240. Stems 6 to 8 inches long, pseudobulbs fusiform slightly flattened olivaceous, 2 inches long ½ inch wide ¼ inch thick. Leaf lanceolate lorate obtuse dark green 6 inches long ¾ inch wide. Flowers as large as those of *D. flabellum*, pedicel ¼ inch long, a little longer than the bracts. Sepals lanceolate acute ½ inch long ⅛ inch wide. Mentum short broad obtuse. Petals linear all white. Lip ¾ inch long side lobes curved acute white spotted inside with crimson, midlobe fan-shaped obcordate emarginate cream colour, keels 2 running on to the midlobe and there plicate sinuate crimson. Column narrowed upwards red spotted arms short. Malay Peninsula (C. H. B. Singapore). Endemic.

11. D. PALLIDIFLORUM, Ridl., l.c.c. p. 240. Stems slender branched, pseudobulbs elongate ovoid, flattened thin 1½ inch long, ½ inch wide, $\frac{3}{16}$ inch thick. Leaves ovate acute thinly coriaceous 3 inches long 1 inch wide. Raceme half an inch long with numerous bracts, pedicels ¼ inch long. Flowers small solitary. Upper sepal ovate lanceolate ¼ inch long laterals much larger ovate, mentum a little longer obtuse. Petals as long lanceolate. All pale yellow with white. Lip lateral lobes triangular acute, midlobe triangular bilobed yellow edges waved, keels 2 large, wavy on the midlobe, median one shorter straight. Column straight arms ovate. Anther emerald green.

Singapore: Kranji, Pulau Tekong (Ridley); Johor: Hulu Kubong (Kelsall); Batu Pahat (Ridley). Distrib. Siam, Sumatra.

12. D.BIFIDUM, Ridl., Journ. Roy. As. Soc. St. Br. Vol. 39, p. 73. Plant with the habit of *D. flabellum* Rchbf. Stems a foot or more long slender, pseudobulbs 2 inches apart oblanceolate flattened 1½ inch long. Leaf broadly lanceolate ovate obtuse 5 inches long, 2 inches wide. Bracts lanceolate acute red. Flowers 1 or 2 opening at a time, ovary and pedicel ½ inch long. Sepals and petals linear oblong acute recurved yellow spotted with red. Petals smaller. Mentum rather shorter than the sepals acute. Lip longer, claw narrow linear edges and keels crenate, apex with two narrow cuneate undulate truncate lobes half as long as the claw white yellowish at the tip. Column stout conic as long as the foot, anther oblong truncate.

Lankawi Islands (Curtis). Endemic.

13. D. LACINIOSUM, Ridl., Journ. Linn. Soc. XXXII. 242. Stems about a foot or more tall branched, pseudobulbs ovoid elliptic flat greenish yellow 1¾ to 2 inches long ¾ inch wide and hardly ⅛ inch thick. Leaf lanceolate obtuse 4 inches long 1½ inch wide. Raceme over an inch long covered with ovate lanceolate bracts. Flowers solitary pale yellow. Sepals subequal widely lanceolate obtuse tips thickened ¼ inch long. Petals narrower acute. Lip lateral lobes falcate, midlobe with a linear base apex oblong truncate much broader laciniate keels 2 straight to the base of the midlobe then sinuate on the claw. Column white, arms tooth-shaped. Anther sub-quadrate apex rounded margin truncate fimbriate. Capsule elliptic ¾ inch long. Endemic.

Singapore: Pulau Seletar (Ridley).

§ 4. APORUM.

14. D. SERRA, Lindl., Journ. Linn. Soc. III. 3. Stems tufted, flattened 6 to 24 inches long sometimes branched, base covered with leaves, upper parts with sheaths only. Leaves ovate acute laterally flattened ¾ inch long ¼ inch wide deep green, sometimes red. Racemes usually from the leafless portion, more rarely from the leafy part, short compact, covered with copious brown acute bracts. Flowers very small ⅛ inch long, pure white. Pedicel and ovary ⅛ inch long. Sepals lanceolate ovate recurved. Petals linear, smaller. Mentum long, narrow obtuse ¾ the length of the ovary. Lip straight, linear oblong, apex of two linear blunt parallel lobes, a small forked callus at the base of the terminal lobes. Column rather long curved, arms erect tooth like. Anther ovate green. Capsule ¼ inch long inequilaterally pear-shaped. Hook. fil. Fl. Brit. Ind. V. 722. *D. micranthum* Lindl. Journ. Linn. Soc. III. 3. Rchb. fil. Walp. Ann. VI. 270. *D. Lobbii* Lindl. l.c.c. *D. aloaefolium* Rchb. fil. l.c.c. *Aporum Serra* Lindl. Gen. and Sp. Orch. Pl. 71. *A. micranthum* Griff. Calc. Journ. Nat. Hist. IV. 376, V. 369. *Macrostomium aloaefolium* Bl. Bijdr. 335, fig. 37. *Oxystophyllum macrostoma* Hassk. Tidjschr. Nat. Gesch. X.i 22. Common over the whole Peninsula.

Singapore: (Wallich 2021) Changi (Ridley 185); Johor: Batu Pahat (Ridley 11257); Pahang: Pekan (Ridley 1211). Distrib. Borneo, Java.

15. D. RHODOSTELE, Ridl., Trans. Linn. Soc. II. Vol. III. (1893) p. 360. Stems 12 to 15 inches long, as in *D. serra*. Leaves lanceolate or ovate lanceolate acute ¾ to 1 inch long ¼ inch wide. Flowers very small white, with numerous dry brown bracts, ovary and pedicel ⅛ inch long. Sepals ovate obtuse. Mentum short broad blunt. Petals linear acute. Lip linear oblong, midlobe bilobed rounded broader than the rest of the lip. Column rather large larger than in *D. serra*

pink. Anther broad flattened. Pollinia narrow linear. Stigma oblong. Capsule pear-shaped ¼ inch long, on an enlarged pedicel. Endemic.

Pahang: Tahan River Valley (Ridley). Endemic.

16. D. ROSELLUM, Ridl., Journ. Linn. Soc. XXXI. p. 168. Tufted plant with the habit of the preceding. Stems erect branched over a foot long. Leaves ovate acute rather distant ½ to ¾ inch long, ¾ inch broad dark green. Racemes from the bare tips of the stems with numerous brown bracts. Flowers pink ¾ inch long. Upper sepals ovate, laterals wider. Mentum long straight apex thickened. Petals smaller ovate lanceolate pink. Lip long narrow, with very short side lobes, midlobe obovate, with an oblong grooved yellow callus on the base apex bilobed lobes broad rounded. Column rather long, arms obscure, anther truncate.

Johor: Gunong Panti (Ridley). Distrib. Borneo.

17. D. EULOPHOTUM, Lindl., Journ. Linn. Soc. III. 5. Stems several erect 4 to 16 inches tall, leafy to the apex. Leaves lanceolate acute coriaceous not imbricating ½ to one inch long, ⅛ inch wide, sheaths ½ inch long. Racemes numerous axillary from the mouths of the sheaths ⅛ inch long. Bracts numerous. Flowers ⅛ inch across. Upper sepal lanceolate oblong laterals larger triangular ovate. Mentum very short and broad. Petals narrower lanceolate, all yellow with red streaks. Lip cordate 3-lobed yellowish, side lobes short blunt spreading midlobe broad rounded, calli two conic ones or one truncate retuse one in the middle of the base of the lip. Column short thick. Anther small. Hook. fil. Fl. Brit. Ind. V. 723.

Singapore: Bajau (Ridley 2380), Kranji (Ridley 366); Johor: Batu Pahat (Ridley); Pahang: Pekan (Ridley); Perak: (Scortechini); Lankawi, Terutau, (Curtis 1697); Kwah (Ridley 8337). Distrib. Tenasserim, Borneo, Java.

18. D. RHIZOPHORETI, Ridl., Journ. Linn. Soc. XXXII. 246. Stems one to two feet long often branched. Leaves not imbricating lanceolate acuminate ¾ to one inch long, ¼ inch wide, pale green (drying black). Racemes axillary with few bracts ¼ inch long. Flowers ⅜ inch long reversed. Upper sepal oblong subacute, laterals much wider ovate falcate. Mentum shorter oblong obtuse. Petals smaller linear. All yellowish with a medium red line. Lip claw linear rosy, laterals lobes curved subacute, median indistinct rounded shorter, edge wavy yellowish, calli 2 bases thickened connate pink apices subulate curved. Column foot long linear.

Singapore: Kranji (Ridley); Johor: Batu Pahat, Hulu Sembrong (Kelsall 4038). Endemic.

19. D. GRANDE, Hook. fil. Fl. Brit. Ind. V. p. 724, Ic. Pl. 2024. Stems 9 inches to a foot long, broad flattened. Leaves lanceolate acute light green 2 inches long nearly ½ inch wide, covering the stems to the top, reduced to sheaths only at the base. Racemes in the axils of the upper leaves, ¼ inch long covered with brown lanceolate acute bracts. Flowers ⅓-½ inch long yellow tinted red, on pedicels ¼ inch long. Upper sepal ovate laterals broader triangular. Mentum as long obtuse. Petals lanceolate acute. Lip cuneate flabellate bilobed, lobes truncate, lateral lobe short, a toothed lamella on the disc. Column short, arms erect toothed like. Anther conic with a tuft of hairs at the apex.

Singapore: Seletar (Ridley); Johor: Kwala Sembrong (Kelsall); Pahang: Tahan River (Ridley); Selangor: Kuala Lumpor Rawang (Ridley); Perak: (Scortechini); Penang: (Ic. in herb. Kew). Not rare on very lofty trees, largest species in the section. Endemic.

20. D. ATROPURPUREUM, Miq. Fl. Ind. Bot. III. 644. Small tufted plant, 2 to 9 inches tall. Leaves lanceolate or linear lanceolate acute imbricating 1 inch long, nearly ¼ inch wide. Racemes short axillary, ¼ inch long with numerous dry bracts. Flowers ¼ inch long, yellow, dotted with pink, or deep red. Upper sepal lanceolate acute, laterals triangular larger with a short broad blunt mentum. Petals smaller linear. Lip entire oblong-spathulate apex rounded, pubescent a horse-shoe-shaped callus on the apex and a conic tubercle beneath the tip. Column straight. Hook. fil. Fl. Brit. Ind. V. 724. *D. concinnum* Miq. loc. *Oxystophyllum atropurpureum,* Blume Rumphia IV. 41, t. 193, f. 4 and 198 c. *O. carnosum,* Bl. Bijdr. 336, fig. 38, Lindl. Gen. and Sp. Orch. pl. 72. *Aporum concinnum,* Lindl. Gen. and Sp. Orch. Pl. Ic.

Singapore: (Wallich 2019), Kranji (Ridley 368); Johor: Kwala Kahang (Kelsall); Pahang: Rumpin River, Pekan (Ridley); Malacca: Sungei Rambei; Selangor: Kuala Lumpor (Ridley); Perak: (Scortechini); Penang: Government Hill. Distrib. Tenasserim, Siam, Malay islands. Common on trees, mangrove swamps, etc.

21. D. SINUATUM, Lindl., Walp. Ann. VI. 280. Stems long pendulous 8 inches or more long. Leaves lanceolate acuminate pungent imbricating fleshy coriaceous 1 inch long ¼ inch wide. Racemes from the upper leaf-axils ⅜ inch long with small and fewer bracts than *D. atropurpureum.* Flowers larger orange, solitary. Upper sepal lanceolate laterals larger triangular. Mentum short thick. Petals much smaller lanceolate blunt. Lip fleshy cuneate with very short tooth like lateral lobes, apex rounded entire thickened with a horse-shoe shaped callus above, dark red, and a conicle tubercle beneath. Column curved, arms erect very inconspicuous. Anther conic. Hook. fil. Fl. Brit. Ind. V. 724. *Aporum sinuatum* Lindl. Bot. Reg. 1841, Misc. 1. Griffith Calc. Journ. Nat. Hist. V. 368.

Singapore: Kranji, Seletar (Ridley); Johor: Batu Pahat; Malacca: (Griffith); Perak: Taipeng (Curtis); Penang: Maingay). Distrib. Borneo.

22. D. ATRORUBENS, Ridl., Journ. Linn. Soc. XXXII. 147. Stems rather stout pendulous or erect, sometimes branched 12 to 24 inches long with numerous long blackish roots. Leaves imbricating lanceolate acute one inch long ¾ inch wide. Racemes subterminal and lateral with very numerous lanceolate acute bracts, forming a tuft ½ to ¾ inch across nodding. Flowers ¼ inch long deep red. Upper sepal lanceolate acute, laterals larger triangular. Mentum wide obtuse. Petals shorter linear. Lip linear cuneate lateral lobes short tooth-like acute, at the case of the thickened rounded terminal lobe, a conical tubercle beneath.

Perak: Larut Hills at 3,000 feet elevation (Ridley); Pahang: Kluang Terbang (Barnes 11230); Kedah: Gunong Jerai (Ridley 5140). On stumps and low trees at about 2,000 to 5,000 feet elevation. Endemic.

23. D. LEONIS, Rchb. fil. Walp. Ann. VI. 280. Stems crowded in a tuft 4 to 8 inches tall. Leaves thick cultrate or ovate subacute ½ inch long and but little narrower. Racemes terminal short broad with many bracts. Flowers appearing singly fleshy yellowish spotted with pink, scented of vanilla. Upper sepal shortly ovate obtuse ¼ inch long, lateals larger widely ovate. Mentum large short and broad. Petals lorate spathulate smaller. Lip oblong nearly entire shorter than the sepals apex bilobed lobes rounded ciliate, an orange yellow central bar ending in small callus. Column short yellow with an orange spot at the base. Anther helmet-shaped. Hook. fil. Fl. Brit. Ind. V. 723. Ann. Roy. Bot. Calc. V. pl. 10. *Aporum indivisum* Lindl. (non Bl.) Gen. and Sp. Orch. pl 70. *A. Leonis* Lindl. Bot. Reg. 1840, Misc. 59, Griff. Calc. Journ. Nat. Hist. V. 368.

Singapore: Changi, etc. (Ridely); Johor: Batu Pahat (Kelsall); Pahang: Kwala Pahang, Kota Glanggi (Ridley); Malacca: Jasin (Derry); Sungei Bahru Ulu (Ridley). Distrib. Cochin China, Borneo.

24. D. PROSTRATUM, Ridl., Journ. Linn. Soc. XXXII. 248. Stems creeping branched, rooting. Leaves ¼ inch long nearly as wide oblong triangular subacute or obtuse fleshy, deep green or red. Flowers resembling the preceding but smaller pale yellow, sometimes red punctate. Upper sepal ovate obtuse, laterals much larger ovate subfalcate. Mentum short broad curved. Petals much smaller spathulate. Lip oblong apex dilate retuse, keel on the disc orange, with a small quadrate erect callus.

Singapore: Kranji (Ridley); Selangor: Sepang (Ridley); Negri Sembilan: Perhentian Tinggi (Ridley). Endemic.

25. D. TERMINALE, Par. and Rohb. fil. Trans. Linn. Soc. XXX. 1874, p. 149. Stems five to six inches long, flattened numerous. Leaves lanceolate acute $\frac{3}{4}$ inch long $\frac{1}{2}$ inch wide. Racemes very short distinct not tufted, borne on old leafless stems. Flowers in pairs rather thin-textured, pedicels $\frac{1}{4}$ inch long slender. Bracts few. Upper sepal ovate oblong laterals much larger ovate triangular falcate $\frac{3}{4}$ inch long. Mentum thick curved obtuse. Petals much smaller linear lorate. Lip oblong cuneate, lateral lobes deflexed truncate midlobe not much longer bilobed, lobes rounded crisped with an orange spot in the centre, the rest of the flowers primrose yellow. Column narrow an orange spot at the base, no arms. Hook. fil. Ann. Bot. Roy. Gard. Calc. *D. Mannii* Ridley, Journ. Linn. Soc. XXX. 246.

Malacca: Mt. Ophir District (Derry). Distrib. Assam, Burmah.

§5. STRONGYLE.

26. D. TERES, Lidl., Bot. Reg. 1840, Misc. p. 51. Stems several slender stiff 10 to 15 inches long. Leaves distant terete obtuse dark green, 2 to 4 inches long $\frac{1}{8}$ inch through, sheaths $1\frac{1}{4}$ inch long terete. Flowers $\frac{3}{4}$ inch long opening singly from tufts of bracts on the ends of the bare portion of the stem. Pedicels and ovary $\frac{1}{2}$ inch long. Sepals lanceolate acute subequal $\frac{1}{2}$ inch long white. Mentum more than $\frac{1}{4}$ inch long straight conic obtuse. Petals a little narrower. Lip shorter 3-lobed lateral lobes oblong ovate subacute, white with orange veins, midlobe narrower lanceolate acuminate, keels on the disc three, mid one shortest, flame-coloured. Column nearly straight channelled in front. Anther conic. Hook. fil. Fl. Brit. Ind. V. p. 726. and Ann. Roy. Bot. Gard. Calc. Vol. V. pl. 11.

Singapore: Toas, (Ridley 1702); Selitar (Ridley); Johor: Kota Tinggi (Ridley); Perak: Larut Hills (Curtis); Penang (Curtis). Endemic.

27. D. FLEXILE, Ridl., Journ. Linn. Soc. XXXII. 251. Stems numerous 3 inches long slender flexuous pendulous. Leaves $\frac{3}{4}$ inch long terete acuminate acute opressed to the stem. Flowers subterminal $\frac{1}{2}$ inch long. Upper sepal small lanceolate acute, laterals ovate triangular acute. Mentum much larger obtuse curved, white. Petals small linear white. Lip white with a central orange spot, claw linear, no lateral lobes, midlobe obovate rounded apex obscurely 3-lobed edge denticulate.

Singapore: Bukit Timah (Ridley); Johor (Ridley); Pulau Aor (Fielding). Endemic.

28. D. KENTROPHYLLUM, Hook. fil. Fl. Brit. Ind. V. 725. Ic. Pl. 2021. Stems tufted stout 4 to 8 inches long. Leaves subterete straight, thick acute $\frac{1}{2}$ to 1 inch long, $\frac{3}{16}$ inch through, numerous, sheaths $\frac{1}{4}$ inch long. Flowers lateral on the terminal leafless portion $\frac{1}{2}$ inch long. Upper sepal ovate oblong, laterals obtuse. Mentum

more than twice as long as the dorsal sepal stout incurved, narrowed at the apex. Lip spathulate bilobed with long claw, no side lobes. Capsule pyriform on a slender pedicel ⅛ inch long.

Perak (Scortechini) : Pahang: Tahan River (Ridley). Endemic.

29. D. ACEROSUM, Lindl., Bot. Reg. 1841, Misc. 86. Stems numerous slender flexuous, 12 to 15 inches long. Leaves recurved laterally flattened linear, pungent 1 to 1½ inch long ⅛ inch wide, sheaths ½ inch long, mouth with a black ring. Flowers ¼ inch long solitary from the internodes of the leafless portion of the stem. Bracts ovate lanceolate small. Dorsal sepal lanceolate very small laterals triangular blunt spreading. Mentum stout obtuse twice as long as the dorsal sepal. Petals narrower linear. All cream colour with or without pink veins. Lip spreading obcuneate obovate, apex crisped bilobed white with a thickened central bar with a yellow tip. Column very short, arms rounded obscure. Hook. fil. Fl. Brit. Ind. V. 726. *Aporum subteres* Griff. Calc. Journ. Nat. Hist. V. 371.

Singapore: Kranji, Changi (Ridley); Johor: Kwala Kahang (Kelsall 4036), Tana Runto (Ridley); Pahang: Pekan (Ridley 1561); Malacca (Griffith); Penang. Distrib. Tenasserim, Siam, Sumatra, Borneo.

30. D.SUBULATUM, Hook. fil. Fl. Bit. Ind. V. 726. Stems tufted numerous 2 to 6 inches long slender. Leaves narrow pungent slightly flattened recurved ½ inch long, sheaths narrowly ¼ inch long. Flowers solitary from the axils of the sheaths of the leafless portion nearly ½ an inch long, pedicels slender ¼ inch long. Upper sepal small lanceolate blunt laterals triangular acute, mentum twice as long curved obtuse, all white with pink veins. Petals linear. Lip oblong truncate apex broad shortly 3 lobed, white with a yellow spot at the tip. Column short. *Podochilus bicolor* Miq. Choix. t. 22, f. 3.

Singapore: Bukit Timah, Kranji, etc., Ridley); Johor; Selangor: Batu Caves, Kuala Lumpor (Ridley); Perak Scortechini); Penang: Western Road (Curtis 2408). Distrib. Rhio, Borneo, Java.

§6. VIRGATAE.

31. D. CONOSTALIX, Rchb. fil. Walp. Ann. VI. p. 292. Terrestrial one to 2 feet tall, stems few wiry terete. Leaves narrow linear apex unequally bilobed, stiff, three inches long ¼ inch wide, sheaths 1½ inch long hispidulous. Flowers one or two together from the axils of the leaves, pendulous ½ inch long. Bracts small ovate. Dorsal sepal ovate green with three olive streaks, laterals rather larger more acute. Mentum very long straight blunt. Lip base narrow yellowish white laterals lobes short acute tooth-like, midlobe rounded thick retuse. Column short thick dilate at base, arms erect tooth-like. Capsule one inch long elliptic pendulous on a pedicel ¼ inch long. Hook. fil. Fl.

Brit. Ind. V. 726. *D. calcaratum* Lindl. Bot. Reg. 1840, Misc. 89. *D. Lobbii* Teysm. and Binn. Nat. Tijdschr. Nedl. Ind. III. 399, Walp. Ann. VI. 292. Hook. fil. l.c.c.

Terrestrial, always in shallow water, "Rumput Rajah Sari."

Singapore: Changi 2377 (Ridley) (Lobb. 482); Malacca: Bukit Bruang (Ridley). Distrib. Labuan.

32. D. VILLOSULUM, Wall. Cat. 2006. Stems graceful terete sometimes branched, 2 to 3 feet tall. Leaves linear lanceolate apex unequally bilobed two inches long nearly $\frac{1}{4}$ inch wide, sheaths terete an inch long covered with black pubescence. Flowers solitary on short pedicels $\frac{3}{8}$ inch long from the mouth of the sheaths, pendulous about $\frac{1}{2}$ inch long. Sepals lanceolate acute $\frac{3}{8}$ inch long yellowish with pale red reticulation. Mentum $\frac{1}{2}$ inch long narrow obtuse straight. Petals narrowly linear recurved, coloured like the sepals. Lip shorter 3-lobed, side lobes narrow erect obtuse, midlobe nearly orbicular edges fleshy primrose coloured. Column short and thick base thickened, arms short obscure. Anther apex retuse margin emarginate. Hook. fil. Fl. Brit. Ind. V. 728.

Terrestrial on dead leaves from sea level to 4,000 feet alt.

Singapore: Bajau (Ridley 2378); Sungei Buluh (Ridley 368); Malacca: Mt. Ophir (Ridley); Penang (Porter, Wall. Cat. 2006) top of West Hill (Ridley); Kedah: Gunong Jerai (Ridley). Endemic.

33. D. PACHYGLOSSUM, Par. and Rchb. fil. Trans. Linn. Soc. XXX. 149. Epiphytic. Stems several slender, a foot long. Leaves distant linear acute 4 inches long $\frac{1}{8}$ inch through, sheaths $\frac{1}{4}$ inch long. Flowers small in pairs on short racemes, lateral. Bracts small lanceolate $\frac{1}{3}$ as long as the pedicel. Sepals spreading oblong obtuse, laterals broader $\frac{1}{4}$ inch long $\frac{1}{8}$ inch wide. Mentum as long blunt, white. Petals narrowly linear acute. Sepals and petals greenish with red streaks. Lip fleshy spathulate, lateral lobes hardly distinct median longer emarginate blunt pale green, keels 2 on the disc. Column narrow arms tooth-like erect. Hook. fil. Fl. Brit. Ind. V. 727, Ann. Roy. Bot. Calc. V. 9 8, t. 12. *D. abietinum* Ridl. Journ. Linn. Soc. XXXII. 252.

Perak: Larut Hills at 2,000 feet (Ridley); Kedah: Gunong Jerai (Ridley); Lankawi: Gunong Raya (Curtis 2562). Distrib. Tenasserim. As this is a hill plant, is it probable that the drawing referred to in the Annals of the Royal Botanical Gardens, Calcutta, from Singapore, was from a cultivated specimen.

§7. BAMBUSAEFOLIAE.

34. D. GEMELLUM, Lindl., Gen. and Sp. Orch. pl. 81. Bot. Reg. 1840, Misc. 192, 1844, Misc. 62. Epiphytic. 2 to 3 feet tall terete below flattened above. Leaves lanceolate lorate apex unequally bilobed

thin light green 4 inches long $\frac{1}{8}$-$\frac{1}{2}$ inch wide, sheaths $\frac{3}{4}$ inch long transversely wrinkled. Raceme from the centre of one of the internodes very short enclosed in oblong obtuse bracts, 2-flowered. Flowers rather small yellowish unexpanded, pedicel $\frac{1}{2}$ inch long ovary thicker $\frac{1}{8}$ inch long. Upper sepal lanceolate obtuse, laterals larger triangular lanceolate. Mentum as long thick obtuse curved. Petals linear lanceolate acute. Lip shorter narrow thin spathulate entire, no side lobes. Column short thick, arms erect, very stout. Capsule ovoid $\frac{1}{2}$ inch long. Hook. fil. Fl. Brit. Ind. V. 727. *Pedilonium biflorum* Bl. Bijdr. 322.

Singapore: Serangoon (Ridley); Malacca: Bukit Bruang (Griffith); Perak: Taipeng (Ridley); Lankawi (Curtis). Distrib. Siam, Java, Sumatra, Borneo. There are two forms, one more slender with narrow leaves, the other stouter with broader stiffer leaves and rather longer flowers.

35. D. PENSILE, Ridl., Journ. Linn. Soc. XXXII. 253. Stems numerous pendulous 2 to 3 feet long entirely leafy terete. Leaves ovate lanceolate fleshy distichous bright green 3 inches long, $\frac{3}{4}$ inch wide. Racemes very short from the middle of the internodes with a pair of sessile yellow unexpanded flowers and an ovate triangular broad dry bract. Ovary thick $\frac{1}{2}$ inch long. Sepals lanceolate twisted, laterals subtriangular blunt. Mentum short broad obtuse. Petals narrow lanceolate. Lip much shorter than the sepals, 3-lobed, side short erect falcate midlobe longer lanceolate acute pubescent with a red median line. Column thick subglobose narrowed upwards, arms none. Anther thick subglobose. Capsule elliptic an inch long very shortly pedicelled.

Singapore: Changi (Ridley 3930), Selitar; Johor (Ridley). Distrib. Rhio.

§8. DISTICHOPHYLLAE.

36. D. BIFARIUM, Lindl., Wall. Cat. 2002. Stems tufted 6 to 12 inches long $\frac{1}{8}$ inch through, channelled. Leaves ellipic oblong shortly unequally bilobed $\frac{1}{2}$ to 2 inches long $\frac{1}{4}$-$\frac{3}{8}$ inch wide. Flowers solitary axillary $\frac{1}{2}$ inch long expanded, white. Bracts 1-2 minute. Pedicel and ovary slender $\frac{1}{2}$ inch long. Upper sepal lanceolate acute, laterals little larger. Petals linear acute. Mentum short obtuse straight. Lip entire broadly obovate retuse centre papillose yellow. Column short thick with 2 tooth-like erect arms. Capsule an inch long $\frac{1}{2}$ inch thick pyriform inequilateral. Hook. fil. Fl. Brit. Ind. V. 732. *D. excisum* Lindl., Bot. Reg. 1841, Misc. 77.

Singapore: Seletar, Kranji (Ridley); Johor: Tana Runto (Ridley); Pahang: Kluang Terbang (Barnes), Tahan River (Ridley); Selangor: Bukit Hitam (Kelsall); Penang (Wallich 2002), Government Hill (Curtis). Distrib. Borneo.

37. D. Hosei, Ridl., Trans. Linn. Soc. III. p. 363. Stems over two feet long ¼ inch through, flexuous. Leaves lanceolate acuminate very unequally bifid, 3 inches long ⅝ inch wide, sheaths ¾ inch long. Racemes from the base of the internodes slender ¾ inch long, 3-4 flowered. Bracts ovate acute $\frac{1}{16}$ inch long. Ovary and pedicel ⅜ inch long. Sepals white oblong ovate acute ½ inch long, laterals larger. Mentum as long as the sepals straight. Petals narrower linear white. Lip ocreous oblong ⅜ inch long, side lobes acute curved white with brown veins midlobe oblong reniform retuse edge sinuate ciliate with three brown parallel veins. Column broad narrowed upwards, arms erect acute.

Pahang: Tahan River (Ridley 2362). Distrib. Borneo.

38. D. revolutum, Lindl., Bot. Reg. 1840, Misc. p. 51. Stems numerous pendulous 2 feet long grooved, ¼ inch through. Leaves broadly lanceolate thinly coriaceous, unequally bilobed 3-3½ inches long ¾ inch wide, sheaths ½-1 inch long. Flowers solitary on a very short peduncle from the base of an internode. Bracts minute ovate acute. Pedicel and ovary ¾ inch long. Upper sepal ovate acuminate ⅜ inch long, laterals larger broadly ovate. Mentum short blunt ⅜ inch long. Petals lanceolate shorter. All white recurved. Lip porrect, ⅜ inch long fleshy, lateral lobes short obtuse deflexed. Median much larger oblong ovate truncate retuse, all dull orange with 3 central brown streaks. Column thick white narrowed upwards with two thick keels in front, arms tooth-like erect. Hook. fil. Bot. Mag. t. 6706. Fl. Brit. Ind. V. 732 (in part) Paxt. Fl. Gard. I. 63, fig. 42.

Singapore: Wayang Satu (Ridley); Johor: Batu Pahat; Malacca: Ayer Panas (Hervey); Kedah: Gunong Jerai (Ridley 5141). Distrib. Tenasserim, Rhio.

39. D. uniflorum, Griff. Notulae III. p. 305. Ic. Pl. As. t. 203. Stems about a foot tall, grooved. Leaves oblong lanceolate unequally bilobed 1-1¼ inch long or less, ½ inch wide, sheaths ¼ inch long. Flower solitary white ½ inch across. Peduncle very short ⅛ inch. Pedicel and ovary over an inch long. Bracts ovate lanceolate acute. Upper sepal oblong acuminate ½ inch long, ¼ inch wide, laterals similar. Mentum shorter straight blunt. Petals obovate acute nearly as long as the sepals. Lip ¾ inch long cuneate three lobed, lateral lobes large oblong blunt, midlobe longer obovate bilobed, two raised ridges violet run on the disc. Column broad, flat in front with a raised line, arms very small green.

Malacca: Mt. Ophir (Griffith, Hullett 864, Derry 612); Perak: Larut Hills (Ridley); epiphyte 3-4,000 alt. Endemic.

40. D. metachilinum, Rchb. fil. Bonplandia III. 1855, p. 222. Stems tufted stout over a foot long, $\frac{3}{16}$ inch thick deeply grooved. Leaves three inches long ⅝ inch wide broadly lanceolate apices very

unequally bilobed, sheaths an inch long. Racemes very short few flowered from the upper axils. Bracts ovate acute very small. Ovary and pedicel ½ inch long. Flowers moderately large, 3 to 4. Upper sepal oblong lanceolate acute ½ inch long ⅛ inch wide laterals similar, mentum ½ inch long straight slender acuminate. Petals linear spathulate $\frac{1}{16}$ inch long. All burnt sienna coloured with darker reticulations. Lip narrow with a long claw and very small tooth-like side lobes whitish, midlobe small ovate fleshy caruncled brown, 2 keels on the disc. Column thick short pale brown with tooth-like erect arms. Anther conic. Hook .fil. Fl. Brit. Ind. V. p. 73.

Malacca: Bukit Jelutong (Derry 161). Endemic.

41. D. PANDANETI, Ridl., Journ. Linn. Soc. XXXII. p. 257. Rhizome creeping vertically on stems of palms or Pandani, branched emitting weak stems 8 to 12 inches long, ⅛ inch through. Leaves lanceolate, acuminate unequally bifid thin herbaceous 3 inches long ¾ inch wide sheaths ½ inch long. Racemes in the upper axils ¼ inch long, few flowered. Bracts minute ovate. Pedicel and ovary 1 inch long. Sepals lanceolate acute ½ inch long ¼ inch wide. Mentum slender obtuse curved shorter. Petals linear acute all white. Lip base narrow linear, side lobes short blunt incurved, midlobe cordate fleshy orange red, keels 3 on disc orange. Column straight olive brown arms ovate incurved. Capsule on a pedicel ½ inch long elliptic pyriform fawn colour.

Singapore: Jurong (Ridley 8071), Bukit Mandai (Ridley 5029); Johor: Pulau Kukub; Batu Pahat (Ridley). Distrib. Siam.

§9. CLAVATAE.

42. D. GRACILE, Lindl. Stems tufted pendulous very slender with one internode near the base swollen fusiform an inch long ½ inch thick. Leaves setaceous channelled very narrow 3 inches long, sheaths an inch long. Raceme lateral very short ⅛ inch long curved with dry brown bracts. Flowers small opening singly on pedicels ⅜ inch long. Sepals lanceolate nearly ½ an inch long, laterals a little wider. Mentum as long curved obtuse. Petals linear all white. Lip 3 lobed side lobes rather large rounded, white with red veins inside, midlobe ovate clawed white. Column straight narrow, arms tooth-like overtopping the depressed anther. *D. setifolium* Ridley, Journ. Linn. Soc. XXXI. 270.

Singapore: Chan Chu Kang (Ridley). Distrib. Borneo, Rhio, Java. Lindley writes in Herb Kew on a specimen from Java, (Lobb). "I suppose *D. gracile* Lidl."

43. D. CLAVATOR, Ridl., Journ. Linn. Soc. XXXII. 255. Stems over a foot long slender, one internode near the base ¾ inch long thickened fusiform ten ribbed. Leaves terete channelled few distant 3 inches long $\frac{1}{16}$ inch thick. Racemes short from the upper (nude)

portion of the stem. Bracts many brown. Flowers small opening singly yellowish tinted with red. Upper sepal lanceolate acute ⅜ inch long, laterals widely ovate falcate. Mentum broad curved thick. Petals ¼ inch long lanceolate shorter and broader. Lip side lobes oblong rounded pale with red nerves, midlobe ovate obtuse minutely toothed, disc elevated yellowish red. Column short arms obscure.

Perak: Taiping (Ridley); Johor: Sungei Tebrau. *D. mellitum*, Ridl., Journ. Roy. As. Soc. S. Br. 4132. Endemic.

44. D. CLAVIPES, Hook. fil. Fl. Brit. Ind. V. p. 728. Ic. Pl. 2027. Stem crowded 6-12 inches long, slender, one internode at base thickened ovoid globose ½ inch long, apex of stem often nude. Leaves narrow linear 1-1¼ inch long ⅛ inch wide flat, apex bifid. Flowers solitary axillary often on the nude part of the stem, ⅜ inch long white. Bracts ovate acute small. Sepals lanceolate acute veined pink. Mentum as long curved thick. Petals lanceolate narower. Lip hastate, lateral lobes rounded hardly distinct, midlobe lanceolate acute, callus on the disc oblong yellow.

Pahang: Pulau Chengei (Ridley); Selangor near the Batu Caves, Kuala Lumpor (Ridley); Perak (Scortechini No. 2184). Distrib. Sumatra.

45. D. TUBERIFERUM, Hook. fil. Fl. Brit. Ind. V. p. 728. Ic. Pl. fig. 1. Stems several 12 to 18 inches tall red, two internodes at the base swollen into an oval compressed pseudobulb 1½ inch long one inch wide ¼ inch thick, apex of stem leafless. Leaves few blunt, elliptic ovate minutely unequally bifid, one inch long ¼ inch to ¾ inch wide, sheaths one inch long. Flowers from the nude portions of the stems lateral solitary ½ inch long. Upper sepal lanceolate acute ¼ inch long white with a violet-crimson median line and tip, laterals triangular acute. Mentum a little longer curved blunt. Petals lanceolate acute white with a violet line. Lip three lobes, side lobes rounded white with violet veins, midlobe longer lanceolate acute apex ciliate, white with a violet crimson central bar to the tip, a retuse callus yellowish on the disc between the side lobes. Column slender.

Singapore: Kranji, Bajau, etc. (Ridley); Johor: Batu Pahat (Ridley); Pahang: Kwala Pahang (Ridley); Perak: Larut Hills, Gunong Hijau (Murton). Distrib. Borneo.

46. D. CRUMENATUM, Sw. in Schrad. Journ. ii. p. 237. Stems numrous often branched 3-4 feet long; four internodes at the base swollen into an elongate fusiform ribbed pseudobulb three inches long ¾ inch through, upper part of stem leafless. Leaves broadly elliptic stiff coriaceous blunt retuse 3 inches long one wide, sheaths terete 1½ inch long. Flowers white produced singly from tufts of dry brown bracts on the nude part of the stem, pedicels ½ inch long. Upper sepal lanceolate acute ¾ inch long, laterals broader. Mentum conic

curved as long as the sepal dilated towards the apex. Petals broader, blunter and shorter than the upper sepals. Lip 3-lobed with an oblong base, side lobes elongate rounded midlobe oblong ovate cuspidate, keels 3 on the disc between the side lobes running to the end of the tip, a pale yellow papillose patch on the midlobe. Column graceful long with a strong central bar, arms tooth-like small. Capsule an inch long elliptic. Lindl., Gen. and Sp. Orch. Pl. 88. Bot. Reg. 1839 t. 22. Griff. Notul. iii. 315. Bot. Mag. t. 4013. Miq. Choix. t. 22. Hook. fil. Fl. Brit. Ind. V. 729. *Onychium crumenatum*, Bl. Bijdr. 326.

Whole Peninsula very common.

Singapore: Pulau Tekong (Ridley 2033); Johor: Batu Pahat; Selangor, Perak, Kedah, Penang, Malacca. Distrib. Burmah, Andamans, S. China, Siam. Malay Archipelago to Christmas Island. "Pigeon Orchid," native names Poko Merpati, Bunga Angin.

§10. Breviflores.

47. D. EUPHLEBIUM, Lindl., Journ. Linn. Soc. III. p. 7. Stems numerous from a short slender branched rhizome, 6 to 9 inches long base slender terete thickened upwards waved. Leaves terminal 2 lanceolate acuminate 3 inches long ¾ inch wide narrowed into a very short petioled. Flowers solitary pendulous on a slender pedicel from a depression from one of the internodes below the leaves with a small yellow bract. Upper sepal ovate oblong blunt, laterals broad triangular ovate. Mentum very short. Petals lanceolate spathulate, all white. Lip base narrow, side lobes erect short, midlobe broad orbicular, centre depressed yellow with pink veins and streaks, a small callus at the base of the claw. Column short thick squared. Anther skull-shaped. Capsule an inch long obconic. Rchb. fil. Xenia Orch. II. p. 26 t. 110.

Singapore: in mangrove swamps, Kranji, Selitar, etc. (Ridley); Johor: Gunong Panti, Batu Pahat. Distrib. Borneo, Java.

48. D. CALLIBOTRYS, Ridl., Journ. Linn. Soc. XXXII 258. Stems several subterete grooved not thickened 6 inches or more long ¼ inch thick, internodes 1½ inch long. Leaves few at the end of the stem lanceolate thinly coriaceous 4 inches long, one inch wide nerves 6 distinct. Raceme an inch long, from an internode near the top of the stem 6-flowered. Flowers crowded fleshy sweet scented hardly expanding, on pedicels ¼ inch long. Bracts ovate acute thin. Upper sepal widely ovate obtuse ½ inch long ¼ inch wide, laterals longer ovate acute falcate. Mentum shorter thick. Petals lanceolate falcate longer than the upper sepal all white. Lip ovate cuneate spoon-shaped fleshy yellow ornamented with red streaks. Column nearly straight. Capsule oblong 1½ inch long pedicel and peduncle thickened.

Singapore: Kranji, Sungei Bulu (Ridley). Distrib. Borneo.

49. D. MODESTUM, Ridl., Journ. Bot. 36 (1898) p. 211. Stems few and slender 7 inches long ⅛ inch wide, flexuous purple. Leaf terminal one rarely 2, lanceolate linear an inch long ¼ inch wide petiolate. Flowers in pairs on a short peduncle, pedicels ½ inch long. Sepals lanceolate ⅜ inch long, laterals with a broader base. Mentum as long acuminate acute, all white tinted rose. Petals linear oblong shorter white. Lip ovate acuminate, side lobes indistinct, white with violet stripes. Column short arms shorter than the oblong anther violet.

Penang, Hill at 2500 feet alt. (Ridley). Endemic.

§11. PEDILONUM.

50. D. LAMELLATUM, Lindl., Gen. and Sp. Orch. Pl. p. 89. Stems 2 to 4 inches tall, of 4-5 flexuous internodes, fusiform with a narrow base thin and flat 1-1½ inch wide $\frac{1}{16}$ inch thick. Leaves 2-3 ovate subacute thinly coriaceous on the apices of the young stems 2-3 inches long one inch wide. Flowers few in short racemes from the upper internodes of the leafless stems. Bracts minute ovate subobtuse. Ovary and pedicel ½ inch long. Flowers nearly an inch long cream-colour withering ochre. Upper sepal ovate subobtuse broad, laterals ovate, mentum long compressed blunt. Petals obovate obtuse narrower. Lip shorter than sepal obcuneate, with a broad rounded apex minutely fimbriate, white with a central orange ochre bar of 5 low keels. Column broad rounded arms very obscure thick. Hook. fil. Fl. Brit. Ind. V. 749. *D. compressum* Lindl., Bot. Reg. 1842. Misc. 76 1844 t. 53. Walp. Ann. VI. 307. *Onychium lamellatum* Bl. Bijdr. 526 fig. 10.

Singapore: Changi, Jurong (Ridley); Johor: Batu Pahat; Selangor: Kuala Lumpor (Curtis); Pahang: Kuantan (Durnford); Perak (Scortechini). Distrib. Moulmein, Borneo, Java.

51. D. SECUNDUM, Lindl., Gen. and Sp. Orch. Pl. 81. Stems terete grooved stout 3 feet long ¼ inch through. Leaves elliptic oblong or linear oblong obtuse 4 inches long 1¼ inch wide. Racemes 4-6 inches long on the old stems, peduncles ½ inch long. Bracts ovate acute $\frac{1}{16}$ inch long persistent. Flowers very numerous densely crowded secund ½ inch long, rose pink or white, shortly pedicelled. Upper sepal ovate acute, laterals similar. Mentum twice as long, curved thick dilate at the apex. Petals blunt but little smaller than the sepals. Lip acute linear spathulate entire, apex orange. Column thickened upwards. Bot. Reg. t. 1291, and 1844 Misc. 65. Rchb. fil. Exot. Fl. t. 269. Bot. Mag. t. 4352. De Vriese Illustr. t. 6. Veitch. Manual. Dendrobium 72. Hook. fil. Fl. Brit. Ind. V. 730. *D. bursigerum* Lindl., Journ. Linn. Soc. III. 16. *Pedilonium secundum*, Bl. Bijdr. 322.

Singapore: Long Island (Nanson); Pahang, near Pekan (Ridley 1460); Negri Sembilan: Seremban (Dr. Braddon); Penang (Wallich 1996); Johor. Distrib. Burmah, Sumatra, Java, Borneo, Philippines, Cochin-China.

52. D. CORNUTUM, Hook. fil. Fl. Brit. Ind. V. 720 Ic. Pl. 2029. Stems slender 12 to 18 inches long. Leaves narrow linear lanceolate acuminate 3-4 inches long ¼-½ wide thin, sheaths ½ inch long. Racemes short few flowered. Bracts minute. Flowers an inch long rose-pink. Upper sepals oblong obtuse, laterals similar. Mentum curved obtuse twice as long as the upper sepal. Petals smaller elliptic oblanceolate, obtuse. Lip spathulate with a long claw, and a small callus at base.

Pahang: Kluang Terbang (Barnes); Perak: Gunong Batu Putih (Wray). Endemic.

53. D. AEGLE, Ridl., Journ. Linn. Soc. XXXII. 260. Stems slender 2 feet long ⅛ inch thick. Leaves lanceolate subacute coriaceous 3 inches long ¾ inch wide. Racemes ¼ inch long many flowered. Flowers small about ½ inch long, pink on pedicels ½ inch long. Bracts lanceolate acute. Upper sepal oblong obtuse ¼ inch long, laterals lanceolate ovate subobtuse. Mentum terete obtuse curved ¼ inch long. Petals shorter broder and thinner. Lip spathulate narrow blade rounded, margin incurved denticulate. Column short and broad, arms tooth-like rather long. Anther conic obtuse dark crimson on a rather long filament.

Perak: Larut Hills at 2000 feet elevation (Ridley); Johor: Batu Pahat (Ridley). Endemic.

54. D. VIRESCENS, Ridl., Journ. Linn. Soc. XXXII. p. 259. Stems long over a foot slender weak, internodes ¾ inch long. Leaves lanceolate acuminate thin. Racemes lax about 2½ inch long 12 flowered. Bracts short lanceolate cuspidate. Pedicels one inch long. Flowers an inch long greenish yellow. Upper sepal ovate acute ¼ inch long, laterals wider, mentum ¾ inch long cylindric blunt. Petals shorter than the sepals ovate. Lip spathulate with a narrow claw, blade rounded and toothed, margins below the blade thickened erect with a fleshy transverse bar. Column broad arms thin and broad. Anther capshaped with a long filament.

Legeh at Tomoh (Machado); Perak: Taiping (Curtis). Endemic.

55. D. SERPENS, Hook. fil. Ann. Bot. Roy. Gard. Calc, Vol. V. p. 10 Pl. 16. Stems very long 2-3 feet flexuous weak, internodes 1-1½ inch long. Leaves elliptic 3 inches long one inch wide apex very unequal. Racemes 1½ inch long, 6 to 8 flowered. Flowers about an

inch long shortly pedicelled. Sepals broadly ovate obtuse, yellow with red streaks, mentum twice as long as the sepals terete obtuse nearly straight green. Petals widely obovate coloured as sepals. Lip claw long linear, blade pandurate, with a scale across the base of the limb. *D. panduriferum* var *serpens* Hook. fil. Fl. Brit. Ind. VI. 186.

Perak (Kunstler). Endemic.

Differs from the preceding in the form of the lip and colouring.

56. D. CROCATUM, Hook. fil. Fl. Brit. Ind. VI. 185. Ann. Bot. Gard. Calc. Vol. V. p. 9. Pl. 14. Stems 1 to 3 feet long, internodes an inch long $\frac{1}{3}$ inch through. Leaves lanceolate acute very unequally bilobed 3 to 4 inches long one inch wide. Racemes short $\frac{1}{2}$ inch long 2-3 flowered. Bracts small ovate. Flowers showy two inches long orange. Sepals lanceolate acute $\frac{1}{2}$ inch long. Mentum an inch long straight cylindric acuminate horizontal. Petals about as large as sepals. Lip spathulate, claw linear blade ovate denticulate crisped with a double keel running down the claw, orange with red spots. Column dilated above. Anther ovoid. *D. pyropum* Ridley Trans. Linn. Soc. III. 362.

Singapore: Chan Chu Kang (Ridley); Pahang: Tahan River Woods (Ridley): Sungei Ujong: Seremban (Braddon): Perak: Larut (Kunstler). Epiphytic sporadically on high trees. I can find no "oblong reversed callus" on the lip as described in Fl. Brit. Ind. but the two ridges join at the base and are a little more elevated at that point. Endemic.

57. D. DERRYI, Ridl. Stems stout somewhat enlarged upwards red 8 to 10 inches long by $\frac{3}{8}$ inch wide, intrnodes $1\frac{1}{2}$ inch long channelled. Leaves oblong obtuse 3 inches long or more. Flowers solitary on the old stem 1 inch or less across, pedicel and ovary $\frac{3}{4}$ inch long. Sepals oblong lanceolate obtuse spreading ocreous. Mentum straight blunt horizontal thick $\frac{1}{2}$ inch long. Petals narrower ocreous. Lip white with a narrow claw, with an elevation double ridge meeting at the base of the lip, blade oblong truncate broad more or less retuse. Column broad short, white, arms erect taller than the depressed flat anther, blunt orange.

Perak: Larut Hills (Derry). Distrib. Borneo. Very variable in the size of the flower.

58. D. HYMENOPTERUM, Hook. fil. Ic. Pl. 2032. Stems slender terete or thickened upwards a foot long purple, with short internodes. Leaves few linear acuminate 3 inches long, $\frac{1}{4}$ inch wide. Flowers solitary thin $1\frac{1}{2}$ inch across and one inch long. Sepals elliptic obtuse white often tinted with violet. Mentum nearly as long slender acuminate. Petals a little larger white. Lip entire spathulate apex broad

rounded truncate white except the base and nerves pale yellow, keels 2 connate on the claw, divaricate on the blade and 2 parellel raised nerves on the disc. Column short greenish white, orange above. *D. Hughii* Rchb. fil. Gard. Chron. 1882 p. 764. Ridley Journ. Linn. Soc. XXXII. 263.

Pahang: Kluang Terbang (Barnes, Ridl. 11076); Perak: Gunong Batu Putih (Wray); Bujong: Malacca (Ridley); Kedah: Gunong Jerai (Ridley); Lankawi: Gunong Raya (Curtis 2563). Endemic.

59. D. Calicopis, Rildey, Journ. Roy. As. Soc. S. Br. Vol. 39. p. 72. Stems slender over a foot long, internodes ½ to 1 inch long. Leaves lanceolate acuminate acute 3 inches long ½ inch wide. Flowers an inch cross 3 or 4 on a short peduncle ½ inch long, pedicels with ovary as long. Sepals ovate obtuse, laterals narrower subacute. Petals broader elliptic obtuse all white tinted with rose. Lip entire broadly oblong truncate, apex bilobed, lobes short rounded, raised veins, 4, two thicker central ones, and two thinner outside, white with a rose spot at the base. Column short thick, dilated at the stigma, arms erect tooth-like crimson. Anther ovate pink large.

Lankawi Island (Curtis). Endemic.

This resembles *D. hymenopterum* Hook. but has the lip bilobed at the tip and the elevated ribs or veins on the disc are very different. The crimson column arms and anther contrast finely with the pale rose-white perianth.

60. D. roseatum, Ridley Journ. Linn. Soc. XXXII. 261. Stems slender over 2 feet long, internodes 1 inch long. Leaves lanceolate acute 3 inches long ½ inch white. Racemes an inch long about 6 flowered. Bracts ovate persistent $\frac{1}{1}$ inch long. Pedicels slender an inch long; flowers large rosy white 1½ inch long. Sepals ½ inch long ovate. Mentum as long straight thick with a curved and clubbed apex. Petals broader than the sepals widely ovate obtuse. Lip with a narrow linear base, blade abruptly rounded quadrate crenulate. Column short and thick arms short broad incurved.

Perak: Larut Hills (Curtis 2061). Endemic.

61. D. Foxii, Ridl., Journ. Bot. 1900 p. 70. Stems slender 3 feet long red. Leaves lanceolate acuminate shining dark green, 4 inches long 1 inch wide. Racemes short ½ inch long, 7 to 10 flowered. Flowers rosy white an inch across, on pedicels an inch long. Sepals ovate acute, laterals more obtuse curved ⅝ inch long, ¼ inch wide. Mentum an inch long thick curved dilated towards the acuminate curved point. Petals oblong ovate rounded edges fimbriate, larger than the sepals nearly ¾ inch long, white. Lip with a narrow linear

claw, blade abruptly dilated pandurate bilobed lobes rounded fimbriate white. Column broad, arms short blunt orange.

Perak: Larut Hills at 4000 feet (W. Fox). Endemic.

62. D. TROPAEOLIFLORUM, Hook. fil. Ann. Bot. Gard. Calc. V. p. 11. pl. 17. Stem elongate flexuous thickened upwards, 1 foot long. Leaves linear oblong acute 2½ inches long inch wide. Raceme 1-2 inches long, rachis slender, flowers 6 or more an inch long. Bracts minute, pedicel and ovary inch long. Sepals triangular ovate acute ¼-⅓ inch long. Petals obovate rounded acute all deep purple. Mentum four times as long as the sepals cylindric obtuse yellow. Lip as long as the sepals, claw linear gradually dilated into the lateral lobes between which is a large semilunar callus, then suddenly contracted into the obovate, apiculate limb.

Perak (Kunstler). Endemic. More nearly allied to *D. serpens* Hook. fil.

63. D. MEGACERAS, Hook. fil. Fl. Brit. Ind. V. 731. Ic. Pl. 2031. Stems 2 feet long slender, internodes 1-1¼ inch long. Leaves oblong lanceolate acuminate 3-4 inches long ¾ to 1 inch wide. Racemes short few flowered. Flowers large 1½ inch long yellowish green. Bracts minute. Upper sepal elliptic oblong obtuse, laterals similar. Mentum 2 to 3 times as long cylindric nearly straight. Petals obovate. Lip cuneate three-lobed claw gradually dilated into limb with an elongate keel at the base, lateral lobes subtruncate crenulate, midlobe suborbicular retuse crenate. Column short arms erect rounded. Filament of anther rather long.

Malacca (Maingay 1613). Endemic.

64. D. TENUICAULE, Ridl., Journ. Roy. As. Soc. S. Br. Vol. 39. p. 73. Stems very slender weak a foot long. Leaves linear lanceolate solitary large ¾ inch across, pedicel and ovary slender half an inch long. Upper sepal ovate blunt, laterals ovate acute. Mentum very long cylindric apex decurved acute ¾ inch long. Petals broadly ovate. All pink darkest at the tips. Lip claw very long narrow, lateral lobes broad upcurved, midlobe short ovate at apex bifid edges crisped, white with a central pink line. Column short with a very long foot, arms tooth-like erect. Anther margin pubescent.

Lankawi: Ayer Hangat (Curtis). Endemic.

65. D. KENTROCHILUM, Hook. fil. Fl. Brit. Ind. V. 731. Ic. Pl. 2030. Stem stout compressed deeply obtuse, 5 to 6 inches long. Leaves oblong obtuse, 5 to 6 inches long coriaceous, 1¼ to 1½ inch

across. Flowers in pairs an inch across, white. Bracts minute, sepals ovate oblong. Mentum curved as long as the dorsal sepal, stout. Petals suborbicular obtuse. Lip clawed rhombic ovate 3 lobed lobes equal, claw with a strong spine. Column short, arms erect curved rather large. Anther hatshaped.

Perak: Batang Padang Valley (Wray). Endemic.

66. D. SANGUINOLENTUM, Lindl., Bot. Reg. 1842 Misc. 73. 1843 t. 6. 1844 Misc. 52. Stems fairly stout 1-2 feet long flexuous, internodes ½ to 1½ inch long $\frac{3}{16}$ inch thick. Leaves lanceolate subacute few, 2 inches long ¾ inch wide. Racemes short 1-1½ inch long, 4 to 6 flowered. Bracts ovate acute ⅛ inch long. Flowers large showy, an inch across. Upper sepal broadly ovate obtuse ¼ inch long, laterals similar; mentum ¾ inch long terete apex gibbous curved, white tinted rose. Petals widely ovate obtuse ½ inch long ⅜ inch wide, white. Lip shorter base narrow straight with a recurved spine-like callus, limb suddenly dilate quadrate rounded edges waved. Column thick arms thin rounded. Anther flat. Veitch Man. Dendr. 72. Hook. fil. Fl. Brit. Ind. V. 731. Var *typica*. Flowers cream colour, tip of sepals, petals and lip violet crimson a central yellow patch on the tip.

Var *cerina*. *D. cerinum* Rchb. f. Gard. Chron. XII. p. 554. Flowers yellowish ochre, occurs with the other.

Selangor: Pahang track (Ridley 8478); Penang Hill (Curtis); Kedah: Gunong Jerai (Ridley 5139). Distrib. Borneo.

§12. EUDENDROBIUM.

67. D. FLAVIDULUM, Hook. fil. Fl. Brit. Ind. VI. 185. Stems rather slender terete 12 to 18 inches tall, internodes an inch long. Leaves lanceolate, 3 inches long by ½ inch wide. Racemes several and inch long or more 3 to 6 flowered. Bracts lanceolate short. Flowers pale yellow or more 3 to 6 flowered. Bracts lanceolate short. Flowers pale yellow or nearly white ½ inch long. Upper sepal ovate acute, laterals similar. Mentum very short thick straight. Petals lanceolate acute about as big as the sepals. Lip oblong three lobed, lateral lobes short lanceolate acute, median longer ovate lanceolate obtuse with a red spot on the tip edges ciliate, 4 low ridges on the disc. Column rather long, arms erect tooth-like acute, anther hatshaped blunt. Capsule elongate elliptic pearshaped ½ inch long.

Singapore: Kranji, etc. (Ridley). Distrib. Rhio. On trees in mangrove swamps. Allied to *D. stuposum*.

68. D. VIRIDICATUM, Ridl., Journ. R. As. Soc. S. Br. 39 p. 72. Stem rather slender over a foot long. Leaves lanceolate acute 2½

inches long, ½ inch wide, sheaths half an inch long. Flowers numerous on leafless stems in very short racemes of 2 or 3 flowers peduncles ¼ inch long. Bracts very small ovate sheathing. Pedicels ¾ inch long. Flowers ½ inch short light green. Sepals lanceolate acute laterals broader. Mentum very short blunt. Petals broader arms erect.

Perak: Ipoh (Goldham).

69. D. HERCOGLOSSUM, Rchb. f. in Hamb. Gartenz. XLII. p. 558. Gard. Chron. 1886. II. p. 487. Stems 1 to 3½ feet long very slender pendulous, internodes about an inch long. Leaves few narrowly linear acuminate thin 3 inches long, half inch wide. Racemes hardly an inch long 2-8 flowered. Bracts lanceolate obtuse small. Pedicel and ovary ½ inch long slender curved. Flowers small ¾ inch across pinkish white. Upper sepal ovate subacute laterals widely ovate. Mentum very short and broad rounded. Petals lanceolate, much smaller than the sepals. Lip ¼ inch long with a very short claw subhemispheric sides enclosing the column, apex beak-shaped acute, a large bearded callus at the base of the blade. Column short thick pubescent, arms short broad erect toothed. Anther purple papillose skull-shaped grooved on the top. *D. aduncum* Hook. fil. Bot. Mag. 6784. (Not Lindley).

Johor: Pulau Tioman Island, East of Johor (Nanson); Batu Pahat (Ridley); Perak: Batang Padang (Curtis). Distrib. China.

70. D. AUREUM, Lindl., Gen. and Sp. Orch. Pl. p. 77. Bot. Reg. 1839 t. 20. Stems subterete thickened upwards 9 to 36 inches tall, internodes ½-1½ inch long. Leaves oblong lanceolate acute 4-5 inches long. Flowers 1 to 3 inches on a short peduncle from the leafless stems, 2 to 2½ inches across, fragrant pale yellow. Sepals linear oblong acute. Mentum large conic truncate. Petals ovate lanceolate acuminate. Lip ovate lanceolate acute recurved, sides incurved, disc pubescent orange yellow with red streaks. Column orange red. Veitch Man. Dendrob. p. 19. *D. heterocarpum* Wall. Pl. As. Rar. II. 84. t. 196. Bot. Mag. t. 4708 and 4970 Fl. de. Serres VIII. t. 842. *D. rhombeum* Lindl., Bot. Reg. 1843 t. 17. *Dendrob.* sp. Griff. Notul III. 304. Ic. Pl. As. t. 306.

Perak: Larut Hills (Stephens). Distrib. India, Ceylon, Java, Philippines. The form collected (once only) is var. *Philippinensis.*

71. D. SUPERBUM, Rchb. fil. Walp. Ann. VI. p. 282. Stems terete 2½ to 4 feet long stout pendant, internodes 1 inch long. Leaves oblong lanceolate acute 5 to 6 inches long. Flowers in pairs on the old stems 3-4 inches across. Sepals lanceolate acute pink. Petals ovate oblong much broader pink. Lip ovate sides convolute pubescent

acute pink with a dark purple centre, a three lobed callus at the base. Misc. 46. Sert. Orch. t. 35. *D. macranthum* Hook. Bot. Mag. t. Williams Orch. 1. t. 42. *D. macrophyllum* Lindl. Bot. Reg. 1839 3970. *D. Scortechinii* Hook. fil. Fl. Brit. Ind. V. 741.

Perak: Larut Hills (Stephens), (Scortechini). Distrib. Philippines, Borneo.

72. D. Dalhousieanum, Wall. Paxt. Mag. Bot. XI. t. 145. Stems terete stout 3 to 4 feet long, internodes 1-1½ inch long. Leaves linear oblong 4 to 6 inches long base cordate. Flowers very large 4 to 5 inches across rosy or yellow with two deep purple blotches on the lip. Sepals oblong acute. Petals much broader. Lip shortly clawed orbicular apex and sides densely villous, disc with two pectinate fringed lamellae. Lindl., Bot. Reg. 1836 t. 10. Journ. Linn. Soc. III. 18. Fl. des. Serres VII. t. 698. Ill. Hort. 1864 t. 423. Veitch. Man. Dendrob. 35. Hook. fil. Fl. Brit. Ind. V. 743.

Singapore on a tree at Chan Chu Kang (Ridley). Distrib. India, Burmah.

73. D. aggregatum, Roxb. Fl. Ind. III. 477. Stems crowded fusiform 1½-2 inches long. Leaf solitary oblong 2 to 3 inches long by 1 inch broad. Flowers 1 to 12 in a loose lateral raceme, yellow. Sepals small ovate obtuse, mentum subglobose. Petals broader ovate. Lip transversely oblong shortly clawed, disc concave pubescent margins ciliate. Column short yellow. Lindl., Bot. Reg. t. 1695. Bot. Mag. t. 3643. Paxt. Mag. VI. t. 145. Veitch Man. Dendrob. 15, II. Hook. fil. Fl. Brit. Ind. V. 750. *D. Lindleyi*, Steud. Nomencl. I. 490. *D. Jenkinsii* Wall. Bot. Reg. 1839 t. 37.

Perak (Scortechini, drawing), Distrib. Assam, Burmah, Siam, China.

Excluded and Doubtful Species.

D. aciculare Lindl., Bot. Reg. 1840 Misc. 81. Singapore Cuming (Hort Loddiges) is doubtlessly wrongly localised, Cuming's herbarium specimens No. 2112 are labelled Bohol Island, Philippines.

D. breviflorum Lindl., Journ. Linn. Soc. Singapore? Hort Loddiges, is stated in the Flora of British India to be *D. bicameratum* Lindl. of India.

D. cruentum Rchb. fil. Gard. Chron. 1884, 1604. "Malay Peninsula on the West Coast (Hort Sanders)" is a native of Siam.

D. junceum Lindl. Bot. Reg. 1842, Misc. 11. "Singapore, Loddiges is doubtlessly wrongly localised.

D. Hughii Rchb. fil. Gard. Chron. 1882 II. 764. Singapore, H. Low is altogether doubtful. The author says it is allied to *D. revolutum*. It is also (Fl. Brit. Ind. VI. 752) said to be a form of *D.*

crumenatum; Boxall states he was with the Collector on Kedah Peak when the plant was obtained and says that it is *D. hymenopterum* Hook. fil. The author's description fits none of these species.

D. perakense Hook. fil. Fl. Brit. Ind. V. 712, is *Eria stellata,* Rchb.

D. pumilum Roxb. Hort. Beng. 61. Hook. fil. in Fl. Brit. Ind. "Perak (Scortechini)" is *D. quadrangulare,* Par.

6. Bulbophyllum, Thouars.

Epiphytes, with a creeping rhizome bearing one jointed pseudobulbs. Leaf solitary on the pseudobulb subterminal coriaceous oblanceolate, linear or ovate. Flowers one to many in a lax or dense raceme, short or long peduncled from the rhizome close to the pseudobulb. Sepals similar lanceolate or lateral ones much longer. Petals smaller. Lip usually fleshy, curved or flat, tongue-shaped small, movable on the end of the column foot. Column short, thick, with a long curved foot to which the lateral sepals are adnate, arms short or long erect or suberect entire usually acute, or two toothed. Anther conic or depressed. Pollinia 2-4, ovoid or elliptic. The second pair much smaller. A large genus of about 400 species common to the tropics of both hemispheres. I include *Cirrhopetalum* in this genus, as it is quite impossible to keep it generically separate.

§ 1. Sestochilus. Flowers large solitary rarely 2 to 4 on long peduncles. Petals much larger in proportion to the sepals than in other groups. Sepals subequal.

Flowers solitary rarely 2 on a peduncle.

- Lip flat narrow linear oblong .. 1. *B. patens.*
- Lip long narrow acuminate .. 2. *B. megalanthum.*
- Lip hastate obtuse .. .. 3. *B. pileatum.*
- Lip ovate acute curved.
  - Lip very small .. .. .. 4. *B. macranthum.*
  - Lip large pseudobulbs cylindric.
    - Sepals acuminate .. .. 5. *B. galbinum.*
    - Sepals acute .. .. .. 6. *B. variabile.*
  - Lip large pseudobulb ovoid .. 7. *B. Lobbii.*
- Flowers small pseudobulb conic .. 8. *B. pustulatum.*
- Lip oblong recurved very thick.
  - Flowers small hardly expanding .. 9. *B. rugosum.*

Flowers large expanded.

Sepals ovate obtuse .. .. 10. *B. membranifolium.*

Sepals lanceolate acute .. .. 11. *B. sanguineo-maculatum.*

Sepals lanceolate caudate .. 12 *B. longiflorum.*

Flowers more than one on the peduncle.

Flowers glabrous .. .. .. 13. *B. subumbellatum.*

Flowers hispid .. .. 14. *B. hispidum.*

§ 2. Monantha parva. Rhizome slender filiform. Leaves and pseudobulbs small. Flowers small solitary on slender pedicels.

Sepals subequal caudate .. 15. *B. striatellum.*

Sepals unequal, laterals larger.

Pseudobulbs horizontal moniliform .. .. 16. *B. catenarium.*

Pseudobulb erect obpyriform 17. *B. Avicella.*

§ 3. Epicrianthes. Rhizome creeping pseudobulbs. Flowers solitary very shortly pedicelled. Petals broken up into 6 or 7 threads. .. .. 18. *B. Epicrianthes.*

§ 4. Hirtula. Small plants, pseudobulbs with a few purple flowers usually pubescent.

Flowers glabrous .. .. .. 19. *B. tenerum.*

Flowers pubescent, rhizome slender flowers few.

Sepals subequal lanceolate .. 20. *B. hirtulum.*

Sepals unepual ovate lanceolate 21. *B. cincinnatum.*

Rhizome stout flowers numerous 22. *B. limbatum.*

§ 5. Racemosa. Flowers numerous in a dense or open raceme purple or spotted pink.

Raceme elongate lax.

Pseudobulbs absent .. .. 23. *B. Wrayi.*

Pseudobulbs developed.

Flowers large hairy .. .. .. 24. *B. lasianthum.*

Flowers small glabrous.

Raceme decurved .. .. .. 25. *B. alcicorne.*

§ 6. Densiflora. Raceme dense. Peduncle very long .. .. 26. *B. gigas.*

Raceme dense, peduncle short.

Pseudobulbs absent, raceme very small .. .. 27. *B. botryophorum.*

Pseudobulbs present.

Flowers pubescent .. .. .. 28. *B. trifolium.*

Flowers glabrous.

Leaf oblong obtuse .. .. 29. *B. lilacinum.*

Leaf lanceolate acuminate .. 30. *B. densiflorum.*

§ 7. Intervallatae. Scape tall wiry, rachis thickened with persistent bracts. Flowers numerous opening singly at long intervals.

Flowers never opening .. .. .. 31. *B. stella.*

Flowers widely expanded .. .. 32. *B. cleistogamum.*

§ 8. Oxysepalum. Stems long pendent from a rooting base. Pseudobulbs appressed to the stem. Flowers small thin solitary or several on a short peduncle enclosed in a sheath.

Stems very slender much branched 33. *B. clandestinum.*

Stems stout, pseudobulbs large .. 34. *B. capitatum.*

§ 9. Biphyes. Rhizome creeping. Pseudobulbs large, small or obsolete. Racemes short or long. Flowers thin small yellow or orange. Sepals subequal lanceolate acute.

Racemes short, flowers few at the end of the scape.

Scape very short hidden in sheaths 35. *B. brevipes.*

Scape slender short.

Sepals equal acute .. .. 36. *B. concinnum.*

Sepals unequal obtuse.

Bases not gibbous .. .. 37. *B. modestum.*

Bases gibbous .. .. .. 38. *B. vermiculare.*

Sepals acuminate white .. .. 39. *B. ochranthum.*

Lateral sepals twice as long as upper sepal .. .. .. 40. *B. citrinum.*

Raceme elongate. Flowers numerous scattered,

Pseudobulbs obsolete very small.

Sepals acuminate, laterals not gibbous.

Lip entire, ciliate .. .. 41. *B. adenopetalum.*
Lip 3 lobed .. .. .. 42. *B. oblanceolatum.*

Sepals acuminate gibbous.

Lip entire pubescent .. .. 43. *B. montigenum.*
Lip 3 lobed .. .. .. 44. *B. leptosepalum.*

Sepals not acuminate.

Raceme shorter than leaves.

Leaves lanceolate .. .. .. 45. *B. apodum.*
Leaves linear .. .. .. 46. *B. linearifolium.*
Raceme much longer than leaves .. 47. *B. odoratum.*
Pseudobulbs large globose.. .. 48. *B. globulus.*
Pseudobulbs large conic .. .. 49. *B. flammuliferum.*

§ 10. Cirrhopetalum. Flowers solitary or whorled on a well developed scape, lateral sepals much larger than upper sepals often more or less connate.

Flowers solitary.

Petals smaller than dorsal sepal.

Lateral sepals narrow free .. 50. *B. ephippium.*
Laterals broad, partly connate .. 51. *B. restrepia.*

Petals as large as dorsal sepal.

Laterals connate twisted .. .. 52. *B. breviscapum.*

Flowers whorled, pseudobulbs flat connate lying on the rhizome .. 53. *B. planibulbe.*

Pseudobulbs erect thick.

Lateral sepals free caudate very long.

Flowers few, 5 inches long .. .. 54. *B. maximum.*

Flowers many capitate smaller.

Capitulum 1½ inch through, flowers spotted pink	55. *B. medusae.*
Capitulum much smaller, flowers yellow	56. *B. vaginatum.*
Lateral sepals caudate connate ..	57. *B. psittacoides.*
Lateral sepals linear connate ..	58. *B. makoyanum.*
Lateral sepals flat free.	
Sepals glabrous	59. *B. Curtisii.*
Sepals ciliate.	
Pseudobulbs conic, sepals acuminate	60. *B. acuminatum.*
Pseudobulbs globose very small ..	61. *B. microbulbon.*
Pseudobulbs large ovoid, sepals broad blunt	62. *B. auratum.*
Lateral sepals flat half connate.	
Petals glabrous	63. *B. perakense.*
Petals ciliate	64. *B. semibifidum.*
Lateral sepals connate, tips only free.	
Lateral sepals linear acuminate ..	65. *B. stenophyllum.*
Lateral sepals oblong obtuse.	
Scape 2-4 inches, flowers pink ..	66. *B. pulchellum.*
Scape 8 inches slender, flowers pink	67. *B. Griffithianum.*
Scape tall stout, flowers large yellow	68. *B. ochraceum.*

§ 1. Sestochilus.

1. B. patens, Hook. fil. Fl. Brit. Ind. VI. 187. Rhizome stout crinite with dense short roots at each pseudobulb. Pseudobulbs one inch apart conic one inch long. Leaf elliptic to elliptic lanceolate coriaceous petioled 3 to 7 inches long, 1-½ inch wide, petiole ½-1 inch long. Flowers solitary on a rather slender peduncle 1¼ inch long yellowish closely red-spotted, about an inch across, scented of cloves. Sepals lanceolate acute, the laterals falcate. Petals as long as upper sepal a little narrower. Lip stipitate on the free part of the column foot linear oblong flat half as long as the lateral sepals crimson. Column dilated above apex of foot free. Arms very short rounded.

Singapore: Changi, Bukit Timah, etc., (Ridley); Johor: Tana Runto (Ridley); Perak: Dindings (Curtis); no locality (Kunstler); Penang: the Spout (Curtis). Not rare. Endemic.

2. B. MEGALANTHUM, Griff. Notulae III. 86. Ic. Pl. As. t. 292. Rhizome fairly stout, pseudobulbs small distant. Leaf very coriaceous oblong emarginate petiolate. Flowers solitary dusky with purple spots. Sepals linear acuminate upper 2½ inches long, laterals scythe-like crossed over the lip. Petals lanceolate long, acuminate rather shorter than the sepals. Lip long narrow slender three lobed, lobes short acute, midlobe long acuminate. Column thick arms short rounded. Fruit clubshaped 2 inches long. Walp. Ann. VI. 246. Hook. fil. Fl. Brit. Ind. V. 754.

Malacca: on Pulau Besar (Griffith). Only known from Griffith's description and figure.

3. B. PILEATUM, Lindl. Bot. Reg. 1844, Misc. 73. Rhizome long rather slender ⅛ inch through crinite, pseudobulbs 1½ inch apart, cylindric narrow ½-1½ inch long. Leaf thinly coriaceous lanceolate petiolate obtuse 4-6 inches long 1-2 inches across, petiole ¼-½ inch long. Peduncle very short, pedicel slender 2 inches long. Flowers 1 inch to 1¼ across, yellow. Sepals subequal and similar lanceolate oblong, obtuse. Petals narrower oblong obtuse, nearly as long. Lip half the length of the sepals flat with a broad rounded base tapering to a blunt point grooved at the base yellow with red spots on each side of the groove. Column unusually long green, arms none. Anther conic. Hook. fil. Fl. Brit. Ind. V. p. 754. *Sarcopodium pileatum*. Lindl. Fol. Orch. 4.

Singapore: Seletar (Ridley); Johor: Panchur (Ridley); Perak: (Wray); Penang (Maingay); Penara Bukit (Ridley 7239); Government Hill (Curtis 1772). Distrib. Sumatra. Climbing on small trees in forests.

4. B. MACRANTHUM, Lindl. Bot. Reg. 1844, t. 13. Rhizome very stout crinite, ¼ inch thick woody emitting large tufts of short roots at the nodes. Pseudobulbs an inch apart, oblong wrinkled one inch long. Leaf coriaceous elliptic obtuse petiolate 5 to 8 inches by 1¾-3 inches wide, petiole stout an inch long. Flowers two inches across, peduncle very short, pedicel thick 2 inches long. Upper sepal lanceolate acute white with purple spots. Lateral sepals larger semiovate acuminate base depressed, connivent, bases yellow with the crimson spots, apices dark brown. Petals resembling the upper sepal but a little narrower. Lip ¼ inch long base quadrate with two truncate ears apex acute curved, yellow tinted with red. Column short and thick yellow, arms porrect tooth-like acute. Anther conic obtuse deep red. Hook. fil. Fl. Brit. Ind. V. 753. Ridley Ann. Bot. IV. p. 328. Pl. XXII. A.

Bot. Mag. 7208. *B. gelatinosum* Teysm. mss. *Sarcopodium macranthum.* Lindl. Paxt. Fl. Gard. I. 155. Fol. Orch. 3.

, Singapore: Jurong, etc., (Ridley); Pahang: Pekan Woods (Ridley 1361); Sungei Ujong (Ridley); Perak: Sonkay (Snow). Distrib. Tenasserim, Sumatra, Borneo. Not rare on tree trunks in forests. Flowers clove scented.

5. B. GALBINUM, Ridl. Journ. Linn. Soc. XXXII. 267. Rhizome long creeping, pseudobulbs 1 to 3 inches apart cylindric ribbed 3 inches long ¼ inch thick. Leaf elliptic acute petioled thinly coriaceous, blade six inches long 1½ inches wide, petiole an inch long. Flowers one or two large wide open on a peduncle 3 inches long slender. Bracts ovate acute ¼ inch long ovary and pedicel 3 inches long. Upper sepal lanceolate acuminate acute 1½ inch long laterals as long ovate acuminate ⅝ inch across. Petals nearly an inch long ovate acuminate. All olive yellow. Lip cordate acuminate fleshy stipitate base deeply excavate apex recurved crimson above whitish beneath. Column broad foot ⅜ inch long, arms short angled obtuse. Anther almost three lobed.

Perak: Larut Hills, common (King's Collector, Ridley 2888); Selangor: Bukit Hitam (Kelsall, Ridley). Endemic.

6. B. VARIABILE, Ridl. Journ. Roy. As. Soc. Str. Br. Vol. XXXIX. p. 74. Rhizome stout woody, pseudobulbs cylindric curved 3 inches long. Leaf elliptic ovate acute 6 inches long 2 to 3 inches wide thinly coriaceous petiole an inch long. Scape from near the pseudobulb stout, red with several sheaths at the base and three or four lanceolate red spotted ones scattered on it. Bracts large lanceolate acute spotted red half as long as the ovary. Flowers one or two large showy 3 inches across. Upper sepal lanceolate acute, laterals falcate. Petals lanceolate nearly as long. All yellow with lines of red dots. Lip tongue-shaped recurved with a broader base short apex blunt yellow with red spots. Column short foot twice as long apex free, arms short rounded. *B. Reinwardtii,* Hook. fil. Fl. Brit. Ind. V. p. 754 (not of Reichenbach).

Perak: Larut Hills (Ridley, Curtis); Gunong Batu Putih (Wray 1122).

Var. *B. rubrum.* Sepals and petals crimson with red spots at the base. Lip dark crimson. Column yellow with crimson spots. Both forms occur in the same locality. Endemic.

7. B. LOBBII, Lindl. Bot. Reg. 1847. sub. t. 29. Rhizome stout. Pseudobulbs close ovoid. Leaf linear oblong acute petioled coriaceous 4 to 8 inches long, one inch wide. Petiole half an inch or long less. Flowers large widely expanded on a very short peduncle with a pedicel

4 to 6 inches long. Upper sepal lanceolate acute or acuminate yellow-spotted with dark red or plain, laterals deflexed falcate broader acute or obtuse. Petals lanceolate acuminate. All ochreous veined and speckled with red or plain. Lip large broadly ovate recurved yellow or dull reddish, speckled or plain. Column broad yellow arms very obscure. Anther small depressed. Hook. fil. Fl. Brit. Ind. V. 755. Bot. Mag. t. 4532. Saunders Refugium Bot. t. 116. *B. Henshalli,* Lindl. Gard. Chron. 1852 422. *B. Siamense,* Rchb. fil. Gard. Chron. 1867. 572. *Sarcopodium Lobbii,* Lindl. Paxt. Fl. Gard. 1155. *S. Lobbii,* var *Henshalli* Henfrey. Gard. Mag. Bot. III. 269. *Sestochilus uniflorum,* Breda Orch. Jav. t. 3.

Perak: Larut Hills (Stephens). Rare. Distrib. Tenasserim, Siam, Java.

8. B. PUSTULATUM, Ridl. Journ. Roy. As. Soc. S. Br. Vol. XXXIX. p. 74. Stem stout crinite pseudobulbs crowded, oblong conic half an inch long. Leaf elliptic lanceolate acute four inches long by one inch wide, petiole ½ inch. Flowers solitary one inch across, pedicel slender ½ inch long. Upper sepal lanceolate acute, laterals much broader ovate obtuse. Petals lanceolate acute nearly as large as the upper sepal. All yellow with red stripes. Lip fleshy dark maroon ovate cordate obtuse ¼ inch long with two raised lobes rounded obtuse at the base and a mass of papillae on the disc. Column short with a long foot, the apex free, arms triangular oblong obtuse.

Malacca: lower part of Mount Ophir (Ridley). Climbing on trees in the forest. Rare. Endemic.

9. B. RUGOSUM, Ridl. Journ. Linn. Soc. XXXI. 266. Rhizome slender branched pseudobulbs numerous crowded cylindric 2 inches long ½ inch through. Leaf oblanceolate acute thinly coriaceous 6 inches long 1½ inch wide petiole. Scape ½ inch long. Bracts few ovate lanceolate. Pedicel and ovary an inch long. Flowers solitary ½ inch across, hardly expanded. Sepals lanceolate acute pale yellow with many grooves on the outer surface, an inch long. Petals shorter yellowish white. Lip thick fleshy oblong with a decurved tip, base excavate reddish pink ¼ inch long. Column thick short fuscous, arms rather long decurved obtuse. Anther conic.

Singapore: Chan Chu Kang (Ridley). Endemic.

10. B. MEMBRANIFOLIUM, Hook. fil. Fl. Brit. Ind. V. 756. Rhizome as thick as a crow quill, pseudobulbs subcylindric narrow rather distant 1-1½ inch long. Leaf 6-10 inches long elliptic lanceolate membranous narrowed into a petiole. Scape stout one-flowered with a single sheath, lanceolate acuminate. Flower 1½ inch across when expanded. Sepals ovate oblong or lanceolate obtuse, laterals deflexed. Petals smaller ovate lanceolate subacute, all yellow green

with red spots. Lip small stipitate tongueshaped decurved apex verrucose purple. Column short, arms blunt rather large, porrect.

Perak: Gunong Batu Putih (Wray). Endemic.

11. B. SANGUINEO-MACULATUM, Ridl. Journ. Linn. Soc. XXXII. 265. Rhizome slender with numerous roots. Pseudobulbs subterete curved 1½ inch long ¼ inch through. Leaf lanceolate acute thinly coriaceous reticulate 4 inches long, one inch wide. Scape 2 inches long with large thin sheaths. Flowers solitary large 2 inches across. Bracts shorter than the ovary. Upper sepal lanceolate acute fleshy 1 inch long ½ inch wide, laterals semiovate elliptic 1¼ inch long. Petals lanceolate acute base narrowed. All greenish yellow with numerous red spots. Lip short curved fleshy blunt very small stipitate, with distinct erect side lobes, yellowish with red spots, apex and median portion of disc covered with deep crimson papillae, a deep central groove on disc. Column short thick yellow with red spots arms of one erect tooth and another longer porrect curved one. Anther depressed red. Capsule 1½ inch long green with purple spots.

Selangor: Kuala Lumpor (Curtis). Endemic.

12. B. LONGIFLORUM, Ridl. Journ. Linn. Soc. XXXII. 368. Rhizome woody for creeping ⅛ inch thick with numerous strong roots. Pseudobulbs cylindric thick 2 inches apart, 1¼ to 1½ inch long. Leaf lanceolate obovate or elliptic acute subcoriaceous 6-7 inches long, 2-2½ inch broad, petiole one inch long. Scape an inch long covered with membranous lanceolate acuminate bracts, pedicel 1½ inch long base enclosed in a long bract. Flowers solitary thin 2 inches long hardly opening. Sepals lanceolate caudate, laterals a little wider ⅜ inch across. Petals longer, 1½-2½ inch long linear lanceolate. All pink with darker veins. Lip ¼ inch long broad thick curved shortly stipitate apex papillose pale orange. Column short greenish, foot long crimson, arms long porrect subterete.

Penang: Government Hill (Curtis); Kedah: Gunong Jerai (Ridley); Perak: Hermitage Hill (Cock). Endemic.

13. B. SUBUMBELLATUM, Ridl. Journ. Linn. Soc. XXXII. 274. Rhizome long and slender. Pseudobulbs crowded or as much as five inches apart, cylindric 2 inches long ⅜ inch thick. Leaf lanceolate acute petioled 5 to 6 inches long, 1¼ inch wide. Scape rather thick 4 inches long with 4 or 5 cuspidate ovate sheaths. Flowers 2-3 rather large 2 inches long crowded in very short raceme on slender pedicels ¾ inch long. Bracts ¼ inch long ovate cuspidate. Upper sepal ovate acute nearly an inch long ⅜ inch wide, laterals subequal twisted. Petals much smaller broadly ovate ⅜ inch long ¼ wide. All greenish yellow with red spots. Lip stipitate tongueshaped acute curved ½ inch long. Column short with a long slender foot, arms very short hardly distinct.

Johor: Hulu Batu Pahat (Kelsall), Tanjong Kupang (Ridley). Distrib. Borneo.

14. B. HISPIDUM, Ridl. Journ. Linn. Soc. XXXII. p. 268. Rhizome stout far creeping with long stiff roots. Pseudobulbs conic thick three inches apart, an inch long. Leaf lanceolate obtuse coriaceous shining 3 to 6 inches long, 2 inches wide petiole an inch long. Scapes stout $\frac{1}{2}$ inch long covered with bracts. Flowers about 8 in a dense raceme half an inch long on a thickened rachis, one inch across deep red foetid. Sepals ovate subacute hairy on the edge $\frac{1}{2}$ inch long $\frac{3}{8}$ inch wide, laterals connate. Petals lanceolate falcate $\frac{1}{4}$ inch long red with brown stripes, edges hairy. Lip thick not stipitate with a short thick claw, blade deflexed broad obtuse tongue-shaped warty with two hooked processes near the base and two keels deep red. Column rather long pale with red spots, foot shorter, arms short erect tooth-shaped. Anther conic obtuse yellow with red spots.

Kedah: Gunong Jerai, alt. 4000 feet (Ridley). Endemic.

§ 2. MONANTHA PARVA.

15. B. STRIATELLUM, Ridl. Ann. Bot. IV. p. 335. Rhizome filiform creeping, pseudobulbs curved conic $\frac{1}{2}$ an inch long, and half inch apart. Leaf erect lanceolate acute 2 inches long $\frac{1}{3}$ inch wide. Scape filiform little longer than the pseudobulb with one or two sheaths at the base. Flowers solitary small nodding, pedicel an inch long. Sepals similar oblong or oblong lanceolate caudate yellow with three red veins half an inch long. Petals ovate oblong apices rounded, beneath yellow, apex spotted red two red spots at base. Column short arms suberect rather short obtuse.

Singapore: Chan Chu Kang, Kranji (Ridley).

16. B. CATENARIUM, Ridl. Trans. Linn. Soc. II. Bot. Iv. 235. Rhizome slender branched with oblong internodes long tips upcurved, green. Leaf $\frac{1}{4}$ inch long elliptic obtuse. Scape filiform an inch long, one flowered. Pedicel slender one inch. Flower orange $\frac{1}{4}$ inch long. Upper sepal lanceolate obtuse, laterals longer and broader, orange with red streaks. Petals lanceolate $\frac{1}{3}$ inch length of the sepals yellow with a central red streak. Lip ovate acute fleshy papillose, dark red, channelled. Column short and thick, arms long erect narrow acute acuminate. Capsule elliptic $\frac{3}{16}$ inch long.

Singapore: Kranji on mangroves, Chan Chu Kang (Ridley); Selangor: Bukit Hitam (Kelsall); Pahang: Kluang Terbang (Barnes); Perak: Larut Hills (Curtis). Distrib. Borneo.

17. B. AVICELLA, Ridl. Journ. Linn. Soc. XXXII. p. 270. Rhizome long and very slender, pseudobulbs an inch apart obpyriform $\frac{1}{2}$ inch long. Leaf $\frac{3}{4}$ inch long $\frac{7}{16}$ inch wide exactly ovate subacute,

coriaceous dark green. Scapes ¼ inch long with solitary reversed small flowers. Bracts very small cup-shaped muconate. Upper sepal lanceolate actue ¼ inch long green, laterals much longer connivent into a boat-shape deep crimson. Petals minute cuneate muconate pallid. Lip shortly stipitate. Claw thickened erect blade lanceolate subobtuse flat narrow orange coloured with a crimson groove purple beneath papillose. Column thick rosy, foot as long, arms long linear truncate bilobed, upper lobe very short lower decurved falcate. Capsule ovoid ½ inch long.

Singapore: Bajau (Ridley 2361), Kranji; Penang: Government Hill 2000 feet (Ridley 7004). Endemic.

§ 3. Epicrianthes.

18. B. epicrianthes, Hook. fil. Flor. Brit. Ind. V. 753. Rhizome tolerably thick covered with sheaths pseudobulbs 1 inch apart half an inch long fusiform enclosed in a sheathing leaf. Leaf elliptic oblong coriaceous blunt or acute an inch long, half an inch or more wide. Scape very short one flowered. Bracts lanceolate. Sepals ¼ inch ovate lanceolate acute pink, spreading. Petals represented by 6 or 7 terete clubbed threads white at base grey at tip, less than half as long as sepals. Lip elliptic lanceolate subacute warted deep purple. Column stout foot shorter, pinkish upper part deep purple arms erect acute, taller than anther. Anther depressed with a long up-curved blunt beak.

Perak: Tapah (Curtis). Distrib. Java.

§ 4. Hirtula.

19. B. tenerum, Ridl. Journ. Roy. As. Soc. S. Br. Vol. XXXIX. p. 75. Rhizome slender filiform pseudobulbs ovoid ¼ inch long, about ¼ inch apart. Leaf oval ½ an inch long not petiolate. Scape slender red 2 inches tall with a few bracts at the base. Flowers three at the apex, small ¼ inch long, pedicelled. Upper sepal lanceolate acuminate, laterals much longer slightly gibbous at base, purple with green bases. Petals ovate elliptic much shorter green. Lip small recurved acute purple. Column thick curved, green foot as long, purple, arms long linear acute curved.

Lankawi (Curtis). Endemic.

20. B. hirtulum, Ridl. Journ. Bot. March 1900, p. 71. Rhizome slender, pseudobulbs globular crowded hardly ¼ inch long. Leaf oblong lanceolate obtuse 1½ inch long ½ inch wide. Scape slender 2 inches long two flowered, flowers ¼ inch long, ovary and pedicel short red. Upper sepal ovate lanceolate acute, laterals wider falcate, pubescent white tipped with purple. Petals narrow linear shorter, white with brown veins and cilia along the edges. Lip tongue-shaped

straight, subacute deep red hairy. Column short and broad green with a red base, arms very short blunt rounded. Anther hat-shaped orange.

Penang Hill at 2000 feet alt. (Ridley). Endemic.

21. B. CINCINNATUM, Ridl. Journ. Roy. As. Soc. S. Br. Vol. XXXIX. p. 75. Pseudobulb very small. Leaf eliptic obtuse, closely nerved 4 inches long by 2 wide. Scape very slender 2 inches long. Flowers small, inch long, 2. Bracts ovate very short, ovary and pedicel $\frac{1}{8}$ inch long. Sepals lanceolate subacute, nearly equal, brown, hairy. Petals brown linear oblong falcate obtuse hairy. Lip oblong obtuse with long white hairs. Column short foot as long, arms short.

Perak: Batu Tujoh (Curtis). Endemic.

22. B. LIMBATUM, Lindl. Bot. Reg. 1840, Misc. 74. Rhizome stout pseudobulb depressed subglobose. Scape stout many flowered, 4 inches long. Flowers $\frac{1}{4}$ inch long, pedicel and ovary very short and thick. Sepals ovate obtuse edges ciliate dark purple. Petals spathulate villous purple. Lip fleshy ovate obtuse concave, disc smooth, margins scabrid, dull green tinted purple. Hook. fil. Fl. Brit. Ind. VI. 763.

Singapore (Hort Loddiges). This has not been met with again anywhere.

§ 5. RACEMOSAE.

23. B. WRAYI, Hook. fil. Fl. Brit. Ind. V. 766. Ic. Pl. 2044. Rhizome woody stout, pseudobulbs conic an inch long, and about an inch apart. Leaf elliptic thinly coriaceous obtuse, 8 inches long by $2\frac{1}{2}$ wide tapering into a petiole 4 inches long. Scape stout 12-18 inches long, with several sheaths at the base and some distant ones above, racemose part 6 inches long. Flowers numerous whorled or subwhorled. Bracts short $\frac{1}{8}$ inch long ovate. Pedicel $\frac{1}{4}$ inch long. Flowers green with pink spots $\frac{1}{4}$ inch to $\frac{2}{3}$ inch (Hooker) long. Sepals lanceolate obtuse laterals falcate. Petals broad oblong obtuse narrowed in the middle, about half as long as the sepals. Lip three lobed with a short narrow claw, lateral lobes rounded, two elevated bosses on the disc between them, midlobe lanceolate with a narrow base, obtuse fleshy. Column with broad wings, arms acute narrow, foot very short apex free. Anther elliptic large with a long fleshy pustular conic process erect on the top.

Perak: Gunong Berumbun, Pahang (Wray) at 8000 feet alt., Larut Hills at 2500 (Derry). Endemic.

Mr. Derry's plant has flowers only $\frac{1}{4}$ inch long, but the structure which is most peculiar is quite that figured in the Icones. Wray's specimens were incomplete.

24. B. LASIANTHUM, Lindl. Gard. Chron. 1855, p. 53. Rhizome very stout woody ¼ inch through, roots copious, pseudobulbs cylindric 2½-3 inches long, three inches or more apart. Leaf lanceolate acute 9 inches long, three inches wide petiole an inch long. Scape stout 4-10 inches long, base (a third) covered with close red sheaths, raceme about 15 flowered. Bracts lanceolate acute half an inch long. Flowers purple hairy an inch long. Ovary and pedicel ½ an inch long. Upper sepal linear oblong laterals as long base ovate concave. Petals shorter lanceolate acuminate glabrous. Lip glabrous. Capsule cylindric narrowed at the base 1½ inch long. De Vriese Ill. Orch. Ned. Ind., Miquel Fl. Ind. Bat. III. 649, Hook. fil. Fl. Brit. Ind. V. 763.

Perak: (Scortechini); Penang: Government Hill (Curtis), Bukit Laksamana (Curtis 1732). Distrib. Sumatra.

25. B. ALCICORNE, Par. & Rchb. fil. Trans. Linn. Soc. XXX. 151. Rhizome long covered with matted roots woody ⅛ inch thick, pseudobulbs small globose covered with brown sheaths ⅛ inch apart. Leaf oblanceolate obtuse coriaceous fleshy 3 to 4 inches long half inch across, tapering into a petiole an inch long. Scape graceful 5 inches long peduncle pink nude 4 inches, raceme decurved 1 inch long. Flowers crowded appressed to the rachis about 20. Bracts very small ovate, ovary and pedicel very short. Upper sepal nearly ¼ inch long, lanceolate acute white tipped with purple and with purple veins, laterals a little longer linear oblong obtuse pink. Petals about half as long ovate cuspidate denticulate white, teeth point and nerve purple. Lip shortly clawed, blade straight oblong obtuse edge ciliate, yellowish claw pink. Column stout white foot shorter, arms large bifid lobes linear oblong with two teeth. Fruit elliptic ⅜ inch long. Hook. fil. Fl. Brit. Ind. VI. 766.

Penang: Government Hill at 2400 feet (Fox), West Hill (Curtis 996). Distrib. Tenasserim.

§ 6. DENSIFLORA.

26. B. GIGAS, Ridley Journ. Linn. Soc. XXXII. p. 277. Rhizome long woody ¼ inch through branched, pseudobulbs cylindric ½ to ¾ inch long ½ inch thick, six inches apart. Leaf obovate or oblanceolate coriaceous blade 12 inches long, 6 inches wide, with a petiole 6 inches long. Scape stout erect 18 inches tall with large sheaths 4 inches long scattered; raceme 5 inches long many flowered nodding. Flowers ½ inch long. Bracts ovate ½-¾ inch long. Sepals lanceolate acute laterals gibbous at the base. Petals linear narrower. All white with red spots. Lip small sessile shorter than the column hastate obtuse curved with two parallel keels orange. Column thick white with three purple spots, foot short orange, arms two toothed. Capsule 1½ inch long elongate pyriform.

Perak: Larut Hills on rocks and trees (Ridley 5193), (Kunstler 4280). Endemic.

27. B. BOTRYOPHORUM, Ridl. Journ. Linn. Soc. XXXII. 275. Rhizome slender far creeping with no pseudobulbs. Leaves ½ inch apart lying flat on the rhizome, elliptic fleshy deep green an inch long, ½ inch across. Racemes pendulous an inch long. Bracts minute ovate. Flowers very small crowded deep purple, ⅛ inch wide. Upper sepal lanceolate acuminate pallid with three streaks laterals much longer semiovate falcate, deep crimson. Petals quadrate truncate white with crimson edge. Lip fleshy, with an oblong claw an ovate elliptic obtuse decurved papillose blade with a thick semicircular ridge at the base. Column rather tall, broad, arms large rounded truncate broad crimson. Anther helmet shaped pustular. Capsule ½ inch long oblong elliptic sessile.

Singapore: Kranji, Toas (Ridley); Pahang: near Pekan (Ridley). Endemic.

28. B. TRIFOLIUM, Ridl. Journ. Linn. Soc. XXXII. 278. Rhizome thick with copious roots, pseudobulbs crowded conoid-ovate ¼ inch long. Leaf lanceolate acute 6 inches long one inch wide. Scape an inch long, raceme ½ inch long capituliform. Flowers very numerous pubescent pink ¼ inch long. Bracts lanceolate acute pubescent. Upper sepal lanceolate acute white with pink stripes, laterals longer oblique acuminate. Petals shorter linear lorate obtuse. Lip with a short deflexed claw tongue-shaped blunt, fleshy warted white with pink spots and a central crimson groove. Column green, short, with a large white tooth projecting from the inner face, foot long straight, arms long suberect truncate oblong.

Singapore: Sungei Morai (Ridley); Johor: Tana Runto (Ridley); Pahang: Pekan (Ridley 1428). Endemic.

29. B. LILACINUM, Ridl. l.c. 276. Rhizome stout ⅛ inch through woody with long stiff roots, pseudobulbs thick conic 1½ inch tall 1 inch through at the base, distant. Leaf oblong lanceolate thick obtuse 5 inches long one inch wide, petiole ¼ inch. Scape 4 inches long thick with sheaths at the base, raceme 3 inches long dense. Upper sepal lanceolate acute, laterals longer lilac with pink spots. Petals much shorter than sepals, claw stout, blade lanceolate obtuse flat straight. Column rather long foot as long arms lanceolate acute erect.

Kedah: Gunong Jerai (Ridley), Lankawi, Niur Stali (Curtis). Distrib. Southern Siam.

30. B. DENSIFLORUM, Ridl. l.c. 277. Rhizome very long woody thick with long wiry roots. Pseudobulbs narrowly oblong terete, 1-2 inches long ¼ inch through, 6 inches apart. Leaf lanceolate acuminate acute 12 inches long by 1¼ wide, petiole 1 inch long, coriaceous,

Raceme dense glabrous pendulous two inches long, peduncle 1½ inch long, thick, covered with swollen sheaths. Flowers ½ inch long. Bracts nearly ½ inch long lanceolate. Upper sepal ⅜ inch long ovate lanceolate mucronate, laterals longer acuminate acute, purplish green with darker spots. Petals lanceolate mucronate ¼ inch long. Lip fleshy tongue-shaped apex decurved purple. Column nearly globose short white with purple spots foot narrow apex free, arms erect triangular acute. Capsule 1½ inch long pear-shaped.

Singapore: Chan Chu Kang, Bukit Timah, Kranji on trees in forests (Ridley). Endemic.

§ 7. Intervallatae.

31. B. stella, Ridl. Journ. Linn. Soc. XXXI. (1896), p. 277. Pseudobulbs crowded ovoid ¾ inch long, roots copious. Leaves lanceolate subobtuse narrowed at the base thick 6 inches long, 1½ inch wide. Scapes 18 inches long nude for the greater part except for a few sheaths, raceme about 80 flowered, rachis thickened. Bracts ovate ⅛ inch long, ovary and pedicel half an inch. Flower large patent. Sepals lanceolate acuminate 1¼ inch long yellow with red streaks. Petals very short ⅛ inch long, similarly coloured. Lip oblong lanceolate acuminate 1½ inch long dark pink with two keels from the base. Column green short, foot as long, arms very short rounded.

B. Vanessa, King. Journ. As. Soc. Beng. LXVI. ii. 3, p. 587.

Singapore: Bukit Mandai, Jurong (Ridley); Perak: (Scortechini; Kedah: Gunong Jerai (Ridley), Batang Padang River (Ayre). Endemic.

I see no difference between the description of *B. Vanessa,* King, and *B. Stella.*

32. B. cleistogamum, Ridl. l.c.c. Pseudobulbs densely crowded conic ¾ inch long. Leaf oblong or oblanceolate 4-6 inches long, ¾ to 1 inch wide petiole half inch long. Scapes several stiff 12 inches long with a few distant sheaths. Raceme short flattened. Bracts ovate acute, ¼ inch long. Flowers cleistogamous not or rarely opening. Sepals lanceolate acuminate, pale yellow, ¾ inch long laterals gibbous at base red inside. Petals minute quadrate toothed with a long cusp, green. Lip long curved acute lateral lobes short falcate median long narrow acuminate, with two parallel approximate keels, base crimson, blade straw colour. Column short thick green with erect subulate arms foot very short, rostellum absent.

Perak: Waterloo (Curtis). Distrib. Rhio, Borneo.

§ 8. Oxysepalum.

33. B. clandestinum, Lindl. Bot. Reg. XXVII. 1841, Misc. 166. Stems tufted pendent branched slender 6 inches to a foot long,

covered with short close fitting ribbed sheaths, pseudobulbs ¼ inch apart, or more distant, oval very small ⅛ inch long. Leaf elliptic oblong coriaceous ½ inch long by ¼ inch wide obtuse narrowed at the base. Flowers borne singly or in pairs in axils of sheaths, on very short pedicels yellowish white ⅛ inch long. Sepals lanceolate caudate subequal. Petals very much shorter ovate translucent blunt. Lip as long as petals entire ovate fleshy. Column short and thick, arms very short erect blunt. Fruit elliptic ⅛ inch long. Hook. fil. Fl. Brit. Ind. V. 753. *B. trisetosum,* Griff. Notul. iii. 23, Ic. Pl. Asiat. t. 293. *Oxysepala ovalifolia,* Wt. Ic. t. 1736. *Epidendrum sessile,* Koenig. Retz. observ. VI. 60.

Singapore: Kranji, etc.; Johor: Kota Tinggi (Ridley); Pahang: Tahan River (Ridley); Malacca: (Griffith), Batu Berendam (Derry); Perak: (Scortechini); Penang: Telok Tikus (Curtis 1979). Distrib. Borneo, Java, Tenasserim.

34. B. CAPITATUM, Lindl. Gen. and Sp. Orch. Pl. p. 56. Stems stout woody in a tuft 6-9 inches long branched pendent or erect covered with dry ribbed sheaths, pseudobulbs conic ½ to an inch long ⅛ to ¼ inch through crowded or ½ inch apart. Leaf lanceolate or elliptic lanceolate acute or obtuse, 2 to 4 inches long ½ to 1 inch across coriaceous. Flowers in a short raceme usually half an inch long or less orange scarlet about 6 or 8 in a raceme. Sepals lanceolate acuminate $\frac{3}{16}$ inch long. Petals shorter narrow linear half as long as the sepals, all red. Lip small tongue-shaped yellow. Column short stout arms suberect acuminate. Hook. fil. Fl. Brit. Ind. V. 759. *Diphyes capitata,* Bl. Bijdr. 314.

On hills 2 to 6,000 feet alt. Johor: Batu Pahat (Ridley); Pahang: Kluang Terbang (Barnes 11228); Perak: Bujong Malacca (Ridley), Gunong Batu Putih (Wray), Larut Hills (Curtis); Penang: Government Hill (Curtis 2883). Distrib. Borneo, Java.

§ 9. DIPHYES.

35. B. BREVIPES, Ridl. Journ. Roy. As. Soc. Str. Br. Vol. XXXIX. p. 75. Rhizome woody, pseudobulbs ½ to ¾ inch apart cylindric conic curved ½ inch long. Leaf elliptic shortly petioled an inch long ¼ to ⅓ inch wide, apex subacute coriaceous. Raceme very short about 6 flowered ¼ inch long. Flowers pale yellow. Bracts lanceolate much longer than the ovary. Sepals subequal lanceolate acuminate ⅜ inch long. Petals about ⅓ as long elliptic blunt. Lip shorter curved fleshy deeply grooved, base clawed, with two strongly raised ridges from the base. Column short and thick with a short foot. Arms erect narrow acuminate.

Perak: Bujong Malacca (Ridley), loc. incert (Scortechini drawing No. 176). Endemic.

This is allied to *B. Gamblei* Hook. fil. but with a much shorter peduncle.

36. B. CONCINNUM, Hook. fil. Fl. Brit. Ind. VI. 189. Ic. Pl. 2038. Rhizome slender far creeping, with numerous wiry roots, pseudobulbs 1 to 2 inches apart, conic curved $\frac{1}{2}$ inch long. Leaf ovate, or ovate lanceolate or elliptic 1-1$\frac{1}{2}$ inch long $\frac{1}{2}$ to 1 inch wide. Scape close to the pseudobulb very slender 1-1$\frac{1}{4}$ inch long. Flowers subterminal 4 or 5. Bracts lanceolate nearly as long as the short ovary. Sepals narrow lanceolate linear acute $\frac{1}{6}$ inch long connivent, similar yellowish with orange tips. Petals about half as long elliptic blunt pallid. Lip as long as petals lanceolate curved orange red. Column stout thick, foot shorter, arms erect slender acuminate. Anther depressed.

Singapore: Sungei Buluh (Ridley 2359), Kranji (Ridley); Johor: Kwala Kahang (Kelsall). Distrib. Borneo.

37. B. MODESTUM, Hook. fil. Fl. Brit. Ind. V. 759. Ic. Pl. 2038, B. Rhizome slender long, pseudobulbs $\frac{1}{2}$ inch apart narrowly ovoid oblique $\frac{1}{3}$ inch long. Leaf linear narrowed at the base apex blunt $\frac{1}{2}$ to 2 inches long, $\frac{1}{6}$ inch wide. Scape slender, 1-1$\frac{1}{2}$ inch long. Bracts minute lanceolate, as long as the pedicel. Flowers 3-5 subterminal very small $\frac{1}{6}$ inch long. Upper sepal ovate lanceolate subacute, laterals broader obtuse. Petals two-thirds of the length of the sepals linear oblong. Lip tongue-shaped obtuse recurved with two keels.

Perak (Scortechini), Bujong Malacca (Ridley). Endemic.

38. B. VERMICULARE, Hook. fil. Fl. Brit. Ind .VI. p. 188. Rhizome slender far creeping, pseudobulbs an inch apart very small globose $\frac{1}{8}$ inch long concealed in sheaths. Leaf elliptic oblong to linear obtuse narowed into a petiole 1-3 inches long $\frac{1}{4}$ inch wide or more coriaceous. Scapes 1$\frac{1}{2}$ inch long close to the pseudobulbs, with 5 or 6 scattered flowers, pale green. Bracts lanceolate acute as long as the ovary. Upper sepal lanceolate, laterals falcate lanceolate acute base gibbous, $\frac{1}{16}$ inch long. Petals smaller subspathulate lanceolate. Lip entire lanceolate obtuse fleshy yellow, edge ciliate with white hairs. Column short not thick, arms short obtuse.

Singapore: Seletar, Kranji (Ridley 2360); Johor: Kwala Kahang (Kelsall); Perak: Bujong Malacca (Ridley 9602 form with very narrow leaves. Endemic.

39. B. OCHRANTHUM, Ridl. Journ. Roy. As. Soc. Str. Br. Vol. XXXIX. p. 76. Pseudobulbs $\frac{1}{4}$ inch long oblong conic densely crowded. Leaf linear lanceolate acute base narrowed 1$\frac{1}{4}$ inch long $\frac{1}{8}$ inch wide. Scape nearly as long. Flowers 5 or 6 crowded in a head, about $\frac{1}{4}$ inch long. Bract lanceolate shorter than the ovary. Upper sepal narrow linear lanceolate acuminate, laterals one-quarter longer,

all white with yellowish tips petals less than half as long as the upper sepal lanceolate obtuse, white. Lip small tongue-shaped acute recurved yellow. Column thick, foot shorter, arms narrow linear acute curved.

Perak: Larut Hills at 3000-4000 feet (Curtis). Endemic.

40. B. CITRINUM, Ridl. Rhizome covered with fibres of old sheaths pseudobulbs crowded or rarely an inch apart conic hardly an inch long. Leaf obovate obtuse fleshy dark green or purplish 1½ inch long ¾ inch wide. Scape filiform shorter or longer than the leaf. Flowers about ten crowded into a head whorled, lemon yellow, nearly ½ inch long. Bracts linear boat-shaped acute as long as the pedicels. Upper sepal ovate lanceolate acute, laterals lanceolate linear twice as long. Petals ovate acuminate or lanceolate acute, shorter than dorsal sepal. Lip fleshy curved thick subacute with two broad keels. Column thick longer than the foot. Arms very short blunt broad. Capsule elliptic ½ inch long, pedicel ⅛ inch.

Cirrhopetalum citrinum, Ridley, Journ. Linn. Soc. XXXI. 1896, p. 279.

Singapore: Tanjong Gol (Ridley 3932), Sungei Buluh (Ridley 1687); Johor: Sungei Bau (Ridley); Malacca: Mount Ophir; Perak: Thaiping. Distrib. Southern Siam, Borneo.

41. B. ANDENOPETALUM, Lindl. Bot. Reg. 1842, Misc. 95. Rhizome stout with copious roots. Pseudobulbs obsolete, very small globose. Leaf thickly coriaceous oblanceolate to lanceolate obtuse 8 inches long by one across, petiole stout enclosed with base of scape in dry brown sheaths. Scape shorter than the leaf 6 inches long rather stout nearly completely floriferous. Flowers numerous scattered pale yellow ½ inch long, pedicel ⅛ inch. Bracts lanceolate acuminate longer than the ovary. Sepals lanceolate acuminate, equal hardly gibbous. Petals very short oblong minutely ciliate blunt. Lip tongue-shaped fleshy blunt channelled ciliate. Column short and thick, arms erect short blunt. Hook. fil. Fl. Brit. Ind. VI.

"Singapore" Hort. Loddiges. cult. in Hort. Bot. Singap. without locality August 1893. Perak, Kamuning (Machado).

42. B. OBLANCEOLATUM, King. Journ. As. Soc. Beng. LXVI. II. 3, p. 586. Rhizome stout densely clothed with coarse fibres and roots, no pseudobulbs. Leaves oblanceolate subacute tapering to a stout petiole, blade 6 to 8 inches long, $\frac{11}{7}$ inch to $\frac{12}{5}$ wide, petiole 2-2¾ inch long. Raceme from the rhizome near a leaf, peduncle as long as the leaf, with several sheaths ½ an inch long. Flowers straw colour numerous not coloured ⅓ inch across. Bracts lanceolate as long as the ovary. Sepals spreading linear lanceolate finely acuminate, laterals larger than dorsal, subfalcate. Petals ⅓ of the length of the

dorsal sepal linear acuminate. Lip half as long as the dorsal three lobed, side lobes erect rounded gradually merging in front with the narrowly oblong subacute, fleshy midlobe. Column very short, apical teeth small sharp erect.

Perak: Gunong Batu Putih (Wray 980), Larut Hills at 4000 feet elevation (Ridley). Endemic.

43. B. MONTIGENUM, Ridl. Trans. Linn. Soc. Vol. IV. p. 235. Rhizome stout nearly $\frac{1}{4}$ inch through, pseudobulbs none. Leaf oblanceolate or oblong lanceolate subacute tapering into a long petiole, blade 6 to 8 inches long, $\frac{3}{4}$ inch wide coriaceous, petiole 1 to 3 inches long, enclosed with the base of the raceme in a long brown sheath an inch long. Raceme 5 inches or more long lower portion 1 inch nude. Flowers numerous scattered $\frac{1}{4}$ inch long, ovary and pedicel $\frac{1}{16}$ inch long. Bracts about as long lanceolate. Sepals lanceolate acuminate, laterals gibbous at the base, subequal. Petals less than $\frac{1}{3}$ of the length fleshy papillose lanceolate obtuse. Lip as long oblong lanceolate entire obtuse pubescent. Column very small foot longer, arms erect acute.

Pahang: Kluang Terbang (Barnes 1090). Distrib. Borneo.

44. B. LEPTOSEPALUM, Hook. fil. Fl. Brit. Ind. V. 767. Ic. Pl. 2045. Tufted plant with very small pseudobulbs crowded. Leaf linear often curved acute narrowed at the base into a long petiole, 4 inches long, $\frac{1}{2}$ inch wide. Scape 3 inches long graceful flowers scattered about 15 in number, $\frac{1}{4}$ inch long, pure white. Sepals lanceolate caudate, laterals gibbous at the base. Petals linear lanceolate much shorter. Lip obscurely 3 lobed lanceolate, side lobes erect, median narrower fleshy pustular. Column short, foot long, arms erect narrow acuminate.

Penang: Government Hill (Curtis 415). Endemic.

45. B. APODUM, Hook. fil. Fl. Brit. Ind. V. p. 766, Ic. Pl. 2043. Rhizome stout woody branched, pseudobulbs very small globose hidden in sheaths. Leaf stiffly coriaceous oblanceolate or linear oblong blade 3-9 inches long $\frac{3}{4}$ to $1\frac{1}{2}$ inch wide petiole stout 3 inches long or less, enclosed in a sheath when young, (whole leaf dries red). Raceme 4 inches long peduncle one inch or less. Flowers numerous, white tinged with yellow, tips orange, $\frac{1}{8}$ inch long scattered. Bracts lanceolate acuminate as long as the very short ovary. Sepals lanceolate subacute laterals gibbous at the base. Petals linear lorate obtuse about half as long. Lip pale orange lanceolate recurved acute fleshy entire (with small lobes rounded at base Hook. fil.). Column short with erect acuminate arms as tall or taller than the anther. Capsule elliptic $\frac{1}{2}$ inch long nearly sessile.

Singapore: Kranji (Ridley 3934), Chan Chu Kang (Ridley 3933); Malacca: (Maingay), Ayer Panas (Ridley, Merlimau (Derry); Negri Sembilan: Perhentian Tinggi (Ridley); Perak: top of Batu Kurau (Scortechini). Distrib. Borneo.

46. B. LINEARIFOLIUM, King, Journ. As. Soc. Beng. LXVI. ii. 3, 1897, p. 586. Rhizome fairly stout, about $\frac{1}{6}$ inch thick through, pseudobulbs obsolete, $\frac{1}{2}$ an inch or more apart. Leaf linear acute or subacute often curved, narowed into a petiole 1-2 inches long, blade 4 to 6 inches long $\frac{3}{8}$ to $\frac{1}{2}$ inch wide. Scape very slender base enclosed with the petiole in a scarious sheath, half an inch long, peduncle 1-1$\frac{1}{2}$ inch, raceme very lax 3-4 inches long. Flowers $\frac{1}{8}$ inch long yellow. Bracts lanceolate acuminate as long as the slender pedicel ovary dilate. Sepals lanceolate blunt, laterals broader and falcate gibbous at the base. Petals narow linear about half as long. Lip oblong fleshy acute or obtuse slightly curved, entire. Column very short, arms erect taller than the depressed anther, broad lanceolate blunt.

Perak (Scortechini), Bujong Malacca (Ridley 9524). Endemic.

47. B. ODORATUM, Lindl. Gen. and Sp. Orch. Pl. p. 54. Rhizome far creeping woody with very small globose pseudobulbs. Leaf 7 or 8 inches long an inch wide oblanceolate obtuse with a petiole 3 inches long, coriaceous. Scape 16 inches rather stout almost entirely covered with flowers. Flowers very numerous small $\frac{1}{8}$ inch long orange colour turning white fragrant. Bracts lanceolate acuminate as long as the ovary $\frac{1}{8}$ inch long. Sepals lanceolate subacute or blunt, laterals similar not gibbous. Petals very small as long as the column ovate lanceolate. Lip very small curved obscurely three-lobed ovate, sides upcurved rather large, midlobe very small tongue-shaped flat obtuse. Column thick, foot oblong, arms entire or two toothed erect acute slender, the back one small subobtuse when present. *Diphyes odorata,* Bl. Bijdr. 312.

Pahang: Tahan River (Ridley). Distrib. Java, Borneo.

48. B. GLOBULUS, Hook. fil. Fl. Brit. Ind. V. 767, Ic. Pl. 2047. Rhizome stout as thick as a swan's quill, pseudobulbs small globose or ovoid crowded $\frac{1}{3}$ inch through. Leaf 1-2 inches long, linear oblong obtuse coriaceous $\frac{1}{2}$-$\frac{2}{3}$ inch through. Scape as long as the leaf stiff with two or three distant sheaths. Flowers small scattered. Bracts ovate acute very small as long as the pedicels. Upper sepal linear oblong, laterals lanceolate subacute. Petals ovate oblong subacute half as long. Lip minute lanceolate much recurved. Column short.

Perak (Scortechini). Endemic.

49. B. FLAMMULIFERUM, Ridl. Journ. Bot. 36, (1898) 211. Rhizome stout $\frac{1}{8}$ inch through woody, pseudobulbs distant oblong conic often curved flattened two inches long half inch wide $\frac{1}{3}$ inch thick.

Leaf oblong lanceolate obtuse coriaceous narrowed at the base into a short stout petiole, 4 to 8 inches long 1 inch wide. Scape six inches long, base covered with thin ventricose sheaths, flowers about 25, ½ an inch long. Bracts ¼ inch long, longer than the pedicels. Sepals lanceolate acuminate yellowish with orange tips, laterals twice as long as the dorsal one not gibbous. Petals very small oblong obtuse yellowish white. Lip fleshy tongue-shaped obtuse pustulate yellowish with a red tip. Column with bifid arms the upper lobe lanceolate erect, the lower ones shorter rounded obtuse.

Selangor on limestone rocks at the caves Kuala Lumpor (Ridley). Endemic.

§ 10. Cirrhopetalum.

50. B. Ephippium, Ridl. Rhizome ¼ inch thick branched, pseudobulbs conic 1-1½ inch long ½ inch thick. Leaf lanceolate acute, narrowed to the base 4 inches long, ¾ inch wide. Scape slender 3 inches long. Flower large. Pedicel and ovary ½ inch long. Bract lanceolate. Upper sepal linear lanceolate subulate base ciliate on the edge, one inch long ⅛ inch wide, laterals 1½ inch long lanceolate falcate subulate, pink with white edges. Petals small obliquely lanceolate acute, bases denticulate pink with purple warts. Lip ½ inch long ovate acuminate thick ciliate with a long point crimson. Column straight rather tall, foot short, arms tooth-like erect.

Ephippium ciliatum, Bl. Bijdr. 309. t. 65. *Cirrhopetalum Blumii,* Lindl. Gen. and Sp. Orch. p. 59.

Singapore: Kranji (Ridley). Distrib. Java, Borneo.

51. B. restrepia, Ridl. Trans. Linn. Soc. II. iii. p. 365. Rhizome short pseudobulbs crowded cylindric ¾ inch long. Leaf obovate petioled 2 inches long, an inch wide. Scape filiform 4 inches long. Upper sepal linear narrowed upwards and clubbed, laterals lanceolate acuminate subfalcate edges at the base and apex connate, an inch long, green with brown edges. Lip small fleshy ovate decurved white spotted above with pink. Column short and thick, foot very short green, arms bifid, front lobe largest blunt.

Pahang: Pekan on bushes (Ridley 1038). Endemic.

52. B. breviscapum, Ridl. Rhizome sheathed, pseudobulbs oblong 4 angled 8 to 10 lines long covered by two sheaths. Leaf subsessile elliptic oblong obtuse, coriaceous 1¼-2 inches long. Scapes from base of pseudobulb erect one flowered, spotted brown. Bract ovate lanceolate acute 2 lines long. Upper sepal lanceolate oblong acute incurved 8-9 lines purple, lateral sepal connate at the base only, oblong subobtuse deflexed, twisted at base 1 inch long, yellow with brown spots. Petals lanceolate acute patent 8-9 lines long, purple.

Lip fleshy 5 lines long base widely cordate obtuse base covered with long hairs, crimson. Column broad at the base narrowed upwards teeth slender acute incurved. Anther puberulous.

Cirrhopetalum breviscapum, Rolfe Bot. Mag. t. 8033.

Perak, cultivated at Glasnevin, and Kew Gardens in 1903.

53. B. PLANIBULBE, Ridl. Rhizome long creeping slender, pseudobulbs elliptic oblong flat lying on the rhizome, purple an inch long ¼ inch wide, 3 inches apart. Leaf elliptic oblong obtuse an inch long, ¼ inch wide. Scape 4 inches long slender purple with a few sheaths and 4 or 5 flowers at the end. Bracts lanceolate acute ¼ inch long. Pedicels slender an inch long. Upper sepal erect lanceolate acute caudate an inch long, laterals deflexed 2 inches long, all yellow with red spots on the back and edges. Petals short obovate subspathulate yellow. Lip recurved fleshy tongue-shaped acute, sides elevated, and a median channel orange. Column stout yellow foot very short purple, arms long subulate as long as the petals.

Cirrhopetalum planibulbe, Ridl. Trans. Linn. Soc. III. p. 364, Pl. LXIV.

Pahang: Pekan (Ridley); Kedah: Yan (Ridley). Endemic.

54. B. MAXIMUM, Ridl. *Cirrhopetalum maximum,* Ridl. Journ. Bot. March 1900 p. 70. Rhizome far creeping stout, pseudobulbs far apart narrow oblong flattened 5 inches long. Leaf lanceolate coriaceous 12 inches long, 4 inches wide petiole 1½ inch. Scape a foot long with a terminal whorl a foot across of 7 flowers each over 6 inches long including the thick pedicel an inch long. Bracts lanceolate acuminate reddish an inch long. Sepals lanceolate caudate. Lip tongue-shaped fleshy acute large cream colour with a violet centre. Column broad oblong cream colour with mauve markings, arms 4, 2 short erect, 2 broad thick horizontal violet.

Perak: Bujong Malacca on trees and rocks at 2000 feet (Ridley, Curtis 3125). Endemic.

55. B. MEDUSAE, Rchb. fil. Walp. Ann. VI. 262. Rhizome very stout pseudobulbs an inch long thick angled conic. Leaf 6 inches long one inch wide, oblanceolate very coriaceous deep green, narrowed at base into a short petiole. Scape 4 to 5 inches long stout with large loose sheaths. Flowers in a large dense globose head an inch and a half through with large lanceolate pallid bracts at base half an inch long. Floral bracts lanceolate acuminate much longer than the short ovary. Sepals caudate, lanceolate, white pink spots, laterals six times as long as the dorsal, nearly six inches long. Petals lanceolate acuminate pinkish much shorter. Lip shorter than the petals nearly straight lanceolate acute yellowish. Column thick, foot as long, arms

porrect lanceolate acuminate waved long. Hook. fil. Fl. Brit. Ind. V. 757. *Cirrhopetalum Medusae*, Lindl. Bot. Reg. 1842, t. 12, 1843, under t. 49, Bot. Mag. t. 4977, Hort. Parad, ii. t. 5.

Singapore: Bukit Timah, Bukit Mandi (Ridley); Johor: Tengarah (Kelsall); Pahang: Tahan River (Ridley); Malacca: Jasin (Goodenough 1662); Perak: Dindings, Lumut (Ridley), (Wray, Scortechini); Penang (Curtis). On rocks and trees not rare. Distrib. Borneo, Siam.

56. B. VAGINATUM, Rchb. fil. Walp. Ann. VI. 261. Rhizome far creeping rather stout, pseudobulbs conic ovoid an inch long an inch apart. Leaf very fleshy and thick, coriaceous, elliptic or oblanceolate obtuse 1 to 4 inches long $\frac{1}{2}$ to $\frac{3}{4}$ inch wide. Scapes 3-4 inches long covered with loose pale sheaths. Flowers numerous crowded into a head pale yellow. Bracts lanceolate acuminate twice as long as the short ovary. Upper sepal ovate obtuse edges ciliate. Lip little longer oblong lanceolate acute recurved fleshy orange. Column short broad, arms tooth-like subulate erect.

Cirrhopetalum vaginatum, Lindl. Gen. and Sp. Orch. Pl. 59, Bot. Reg. 1842 under t. 12, and 1843 under t. 49. Hook. fil. Fl. Brit. Ind. VI. 773. *C. caudatum*, Wright, Ic. t. 1658.

Singapore (Wallich 1979), Kranji Road (Ridley 2374); Johor: Tana Runto (Ridley 3931); Pahang: Pekan (Ridley 1608 1244); Selangor: Bukit Hitam (Kelsall), Sepan (Ridley); Malacca: Mount Ophir (Ridley), Ching (Derry 589); Penang (Curtis 1777), Lankawi (Curtis). Distrib. Borneo. Very common often growing in large masses.

57. B. PSITTACOIDES, Ridl. Rhizome branched pseudobulbs conic crowded or distant $\frac{1}{2}$ inch long. Leaf elliptic or lanceolate obtuse coriaceous, 4 inches long $\frac{3}{4}$ to $1\frac{1}{4}$ inch wide. Scape very slender 8-12 inches long red. Flowers small 8 or 9 in a whorl. Bracts lanceolate acuminate $\frac{1}{25}$ inch long. Ovary and pedicel $\frac{1}{4}$ inch long. Upper sepal ovate cucullate with a long point edges ciliate base yellow apex red, laterals $1\frac{1}{2}$ inch long connate at the base into a tube the points free setaceous dark red with two yellow spots in the mouth of the tube. Petals lanceolate acuminate as long as dorsal sepal, with long points edges ciliate. Lip fleshy recurved acute violet. Column conic, foot broad about as long yellow dotted with red, arms very short rounded. Capsule elliptic fusiform $\frac{1}{2}$ inch long.

Cirrhopetalum psittacoides, Ridl. Journ. Linn. Soc. XXXII. 280.

C. gracillimum, Rolfe, Kew Bulletin, 1895, p. 34.

Johor: Kwala Batu Pahat (Kelsall); Malacca: Sungei Hudang (Goodenough 1700); Negri Sembilan: Gunong Angsi (Ridley

10356); Dindings: Telok Sera (Ridley): Perak: Thaiping (Curtis), Lankawi (Curtis). Distrib. Siam.

58. B. Makoyanum, Ridl. Rhizome rather slender. Pseudobulbs an inch apart ovoid nearly an inch long. Leaf elliptic obtuse or lanceolate narrowed at the base coriaceous 3 to 6 inches long ½ to 1 inch wide, shortly petiolate. Scape slender red 1-8 inches long, with one or two sheaths. Flowers 11 in a whorl. Bracts lanceolate acuminate ⅛ inch long purplish. Ovary and pedicel ¼ inch long. Upper sepal acuminate red edges with yellow hairs, laterals connate long narrow linear 2 inches long, yellow with red spots. Petals ovate lanceolate acuminate, yellow with red spots or red. Lip small fleshy curved blunt grooved yellow with a red edge or red. Column stout, foot sigmoid, arms broad acute.

Cirrhopetalum makoyanum, Rchb. fil. Gard. Chron. 1879, p. 243. Hook. fil. Bot. Mag. t. 7259.

Singapore: Chan Chu Kang (Ridley).

Var. *Brienianum.* Upper sepals and petals brown purple, lower sepals yellow.

C. Brienianum, Rolfe. Kew Bulletin, 1893, p. 62.

Johor: Gunong Panti (Ridley); Perak: Thaiping (Ridley). Distrib. Borneo.

59. B. Curtisii, Ridl. Journ. Roy. As. Soc. S. Br. Vol. XXXIX. p. 76. Rhizome slender creeping pseudobulbs ovoid conic ⅜ inch long, ½ an inch apart. Leaf elliptic oblong obtuse thick 1-1½ inch long ½ inch wide very shortly petioled. Scape slender 2-3 inches long, with a lanceolate pointed sheath in the middle. Flowers crowded at the top, about 5. Bracts lanceolate acuminate. Upper sepal triangular lanceolate laterals quite free linear flat narrow ⅜ inch long yellow. Petals falcate lanceolate, all glabrous brown. Lip small tongue-shaped fleshy curved. Column broad arms triangular short.

Dindings: in mangrove swamps (Curtis). Endemic.

60. B. acuminatum, Ridl. Rhizome long, pseudobulbs fusiform conic an inch apart, ½ inch long. Leaf lanceolate acuminate, 3 inches long nearly one across. Scape 6 inches long slender, 5 flowered in a half circle. Bracts lanceolate acute. Upper sepal ovate aristate ciliate orange with red stripes laterals an inch long narrow elongate acuminate free, reddish with yellow tip. Petals ovate ciliate with a long point orange with red stripes. Lip short obtuse slightly curved greenish with purple spots. Column rather long arms short.

Cirrhopetalum acuminatum, Ridl. Journ. Linn. Soc. XXXII. 282.

Singapore: Chua Chu Kang (Ridley). Endemic.

61. B. MICROBULBON, Ridl. Rhizome slender pseudobulbs globose ¼ inch long an inch apart. Leaf elliptic or obovate coriaceous obtuse 1½ to 1¾ inch long, ¾ inch across. Scape very slender filiform 5 inches long. Flowers whorled 8, small. Bracts lanceolate acute $\frac{1}{16}$ long. Upper sepal ovate cuspidate edge ciliate laterals very narrow linear free ½ inch long pink. Petals as long as the upper sepal lanceolate cuspidate ciliate. Lip minute ovate.

Cirrhopetalum microbulbon, Ridl. Journ. Linn. Soc. XXXII. 283.

Singapore: Sungei Buru (Ridley). Endemic.

62. B. AURATUM, Ridl. Rhizome short, pseudobulbs crowded ovoid grooved and wrinkled ¾ inch long, ½ inch thick. Leaf oblanceolate petiolate thick obtuse purple six inches long one inch wide. Scape graceful six inches tall nodding rosy, flowers 8 in a whorl. Bracts small lanceolate. Upper sepal ovate aristate yellow with 5 deep crimson stripes edges hairy, laterals nearly an inch long free $\frac{1}{5}$ inch across, pink, linear oblong. Petals lanceolate aristate yellow with 3 crimson stripes, as long as the upper sepal. Column short thick foot about as long, arms obscure.

Cirrhopetalum auratum, Lindl. Bot. Reg. 1840, Misc. p. 50. l.c. 1843, t. 61.

Selangor: Sepan (Ridley).

63. B. PERAKENSE, Ridley, Journ. Roy. As. Soc. S. Br. Vol. XXXIX. p. 76. Pseudobulb ¼ inch long conic. Leaf elliptic narrowed at the base 2-3 inches long ½ inch wide coriaceous. Scape 3-4 inches long fairly stout, flowers crowded numerous, glabrous. Bracts lanceolate acuminate. Upper sepal ovate, acute, laterals ⅜ inch long, connate for half their length tips acuminate. Petals nearly as large as the upper sepal ovate lanceolate acute. Lip tongue shaped channelled above, but little curved. Column arms triangular obtuse erect broad.

Perak: Waterloo (Elphinstone). Endemic.

64. B. SEMIBIFIDUM, Ridl. Rhizome slender pseudobulbs conic angled ½ to ¾ inch apart ¼ inch long. Leaf lanceolate coriaceous 1½ inch long ½ inch wide. Scape very slender 4 inches long crimson, with 3 or 4 acuminate sheaths. Flowers 5 in a whorl. Bracts linear acuminate red pedicel and ovary ⅜ inch long. Upper sepal ovate acuminate rosy with darker streaks edge hairy, laterals 1½ inch long $\frac{3}{16}$ inch wide connate for half their length, apices lorate acuminate widely separate, deep crimson. Petals ovate lanceolate falcate acuminate edges hairy. Lip tongue shaped curved rosy, tip paler. Column rather long yellow arms short rounded.

Cirrhopetalum bifidum, Ridl. Journ. Linn. Soc. XXXII. 284.

Singapore: Kranji (Ridley). Endemic.

65. B. STENOPHYLLUM, Ridl. Rhizome long slender covered with papery sheaths, pseudobulbs conic cylindric 2 inches apart ⅛ inch long. Leaf narrowly linear lanceolate obtuse 4 inches long ½ inch wide. Scape 6 inches long reddish. Flowers few and small. Bracts ¼ inch long linear acute. Upper sepal lanceolate acute greenish with dark purple streaks edge hairy, laterals almost completely connate, linear acuminate apices setaceous pale red ½ an inch long. Petals triangular lanceolate acuminate green streaked with purple. Lip tongue shaped subacute curved fleshy purple.

Cirrhopetalum linearifolium, Ridl. Journ. Linn. Soc. XXXII. 283.

Singapore: Changi, Chan Chu Kang, etc. (Ridley). Endemic.

66. B. PULCHELLUM, Ridl. Rhizome slender, pseudobulbs crowded conicle 3-angled an inch long. Leaf fleshy narrowly oblanceolate obtuse narrowed at the base, 3-6 inches long, ½ inch wide petiolate. Scape slender 2 to 4 inches long, flowers about 12 in a whorl. Bracts narrow lanceolate setaceous half as long as the ovary. Upper ovate aristate yellowish densely spotted with red edge ciliate laterals almost completely connate oblong oblanceolate obtuse. Petals lanceolate aristate hairy on the edge. All similarly coloured. Lip thick curved deep purple with a yellow tip. Column thick, foot about as long, arms short broad rounded or truncate.

Cirrhopetalum concinnum, Hook. fil. Fl. Brit. Ind. V. p. 190. Ic. Pl. t. 2060 B.

Singapore: Chan Chu Kang (Ridley); Johor: Tana Runto (Ridley); Selangor: Sepan (Ridley).

Var. *purpureum,* Ridl. whole flower deep crimson, except the yellowish tip. Sepals shorter and broader. Lip more abruptly curved.

Penang Hill (Curtis). Distrib. Islands south of Singapore, Siam (var. *purpureum*).

Var. *brachysepalum.* Flowers very small, laterals connate only in the upper part, tips rounded, hardly ¼ inch long, flowers coloured as in var. *pupureum.* Possibly a distinct species. Lankawi: Kwah (Curtis).

67. B. GRIFFITHIANUM, Par. Rchb. fil. Trans. Linn. Soc. XXX. 153. Rhizome moderately stout, pseudobulbs an inch apart or less conic, grooved ½-¾ inch tall. Leaf oblong lanceolate obtuse or oblanceolate, coriaceous 4 inches long 1⅛ inch wide. Scape 8 inches tall slender, flowers whorled 8-10. Bracts linear lanceolate setaceous, shorter than the pedicel red. Upper sepal ovate artistate hairy, yellowish brown or pink with darker spots laterals sepals connate oblong

obtuse, ¾ inch long ⅛ inch wide, reddish or pink with dark spots, or suffused rosy. Petals as long as the upper sepal and similarly coloured lanceolate aristate edges hairy. Lip fleshy very small recurved channelled with 3 obscure ribs yellow tipped purple, or brown. Column thick foot hardly as long, yellowish or rosy spotted dark rose, arms short broad rounded.

Cirrhopetalum gamosepalum, Griff. Notulae, III. 296. Hook. fil. Fl. Brit. Ind. V. 774. Ann. Bot. Roy. Gard. Calc. Vol. V. p. 17. Plate 26. *C. Andersonii*, Kurz., Rep. Voy. Andam. 51.

Singapore: Bajau (Ridley); Johor: Kwala Kahang (Kelsall); Malacca: Sungei Rambei. Distrib. Tenasserim, Borneo.

68. B. OCHRACEUM, Ridl. Rhizome long, pseudobulbs rather crowded conic 4 angled-1½ inch long ½ inch thick. Leaf oblanceolate obtuse thinly coriaceous, 7 inches long one inch wide. Scape rather stout 10 inches red. Flowers about 10 rather large. Bracts lanceolate very acuminate. Upper sepal ovate acuminate reddish edge hairy, laterals connate for their whole length oblong lanceolate obtuse an inch long, ¼ inch wide orange ochre, with red spots. Petals lanceolate edges hairy red. Lip tongue shaped, recurved, olive colour. Column rather long, foot slender, arms large thin triangular.

Cirrhopetalum ochraceum, Ridl. Journ. Bot. 36 1898, p. 212.

Selangor: Pahang Track (Ridley).

EXCLUDED SPECIES.

B. crassipes, Hook. fil. Fl. Brit. Ind. V. 760. "Penang H. B. Ker Dec. 4 1852" in Herb. Lindley. Mr. Rolfe states this is exactly like the Sikkim plant, hence there is a suspicion as to locality. It has not otherwise been known to occur in the Peninsula.

7. DENDROCHILUM, Bl.

Rhizome woody creeping branched, pseudobulbs usually remote leaves coriaceous solitary, small. Raceme slender from the rhizome near the bulbs, with dry sheaths at the base. Flowers numerous very small white. Sepals narrow equal, laterals adnate to the column foot. Petals smaller. Lip small articulated with the column foot. Column rather tall with lateral arms, apex hooked. Anther two-celled. Pollinia 4 ovoid united by a viscus.

Lip lanceolate.

Leaf lanceolate	1. *D. album.*
Leaf narrowly linear	2. *D. angustifolium.*

Lip pandurate.

Leaf obovate coriaceous	3. *D. crassum.*
Leaf elliptic	4. *D. ellipticum*,

1. D. ALBUM, Ridl. Journ. Linn. Soc. XXXII. 287. Rhizome long ⅛ inch thick, pseudobulbs conic an inch apart, one inch long. Leaf elliptic lanceolate obtuse 3-4 inches long, ¾ to one inch wide, petiole ½ inch long. Raceme slender 1 inches long, bases covered with membranous bracts. Flowers small numerous white. Bracts very small much shorter than the ovary. Sepals ⅛ inch long linear obtuse thickened at the tips. Petals similar smaller. Lip shorter lanceolate subacute, keels 2 thickened. Column arched, upper margin prolonged lanceolate retuse, arms linear acuminate.

Bulbophyllum pteriphilum, Rolfe. Kew Bulletin 1894 391.

Perak: Larut Hills (Ridley, Derry), (King's Collector 3279) at 4600 feet elevation.

2. D. ANGUSTIFOLIUM, n.sp. Ridl. Journ. Roy. As. Soc. S. Br. Vol. XXXIX. p. 77. Rhizome long woody terete, pseudobulbs 1-1½ inch apart or closer subcylindric ½ to ¾ inch long. Leaf narrowly linear lanceolate 2 inches long ¼ inch wide blunt mucronulate, narrowed at the base. Scape solitary or several together on a stout short peduncle from the base of the pseudobulb, with numerous basal sheaths 3-4 inches long, flowers numerous, greenish white ⅛ inch long. Bracts ovate subacute ½ the length of the ovary. Rachis scabrid. Sepals linear lanceolate. Petals narrower. Lip narrow lanceolate obtuse with two thick ridges at the base, and a lower one between them. Column short upper margin hooded minutely denticulate, arms linear from near the base. Capsule ½ an inch long subglobose ovoid three angled.

Selangor: Bukit Hitam (Kelsall); Pahang: Kluang Terbang (Barnes). Endemic.

3. D. CRASSUM, Ridl. Journ. Linn. Soc. XXXII. 288. Rhizome terete ¼ inch thick, internodes ¼ to ¾ inch long. Pseudobulbs cylindric ½ inch long. Leaf 4 inches long 1½ inch wide elliptic obtuse coriaceous. Petiole ¼ inch long. Raceme 3 to 4 inches long completely covered with small flowers, rachis angled. Bracts ovate lanceolate ⅔ length of the pedicel. Sepals oblong obtuse fleshy ⅛ inch long and as wide green. Petals obovate obtuse green. Lip small white pandurate, tip broadly obovate with two keels. Column thickened upwards, foot very short, back of the clinandrium broad rounded entire, arms lanceolate acute falcate.

Perak: on Hermitage Hill near Kwala Kangsar (Ridley). Endemic.

4. D. ELLIPTICUM, Ridley Journ. Roy. As. Soc. Str. Br. Vol. XXXIX. p. 78. Rhizome long woody branched yellow pseudobulbs slender conic cylindric curved ¾ inch long. Leaf thinly coriaceous elliptic oblanceolate obtuse 3 inches long by one wide. Scapes 3 inches long with large sheaths at the base. Bracts ovate acute nearly

as long as the ovary. Flowers ⅛ inch long rather fleshy. Sepals lanceolate acute apex thickened terete. Petals similar but narrower. Lip pandurate obtuse pustular, basal ridges obscure, a pustular mass. Column rather long hooded, margin with three teeth, arms from about half up linear longer than hood.

Singapore, Sembawang (Ridley 6536). Endemic. Rare.

Excluded species.

D. bracteosum, Rchb. fil. Walp. Ann. VI. 24. *Liparis bracteosa*, Wall. Cat. 7406. Malay Peninsula, (Finlayson), was probably obtained in Cochin China.

D. linearifolium, Hook. fil. *Platyclinis linearifolia*, Ridl.

D. pallideflorum, Hook. fil. Fl. Brit. Ind. VI. 782, error for *pallideflavens*, Bl. The specimens referred to this by Sir Joseph Hooker are partly *D. album* and *D. crassum*. I have not seen *D. pallideflavens*, Bl., from the Peninsula.

8. Eria, Lindl.

Epiphytes, rarely terrestrial, stems slender terete or more or less swollen. Leaves lanceolate usually coriaceous. Inflorescence racemose rarely spicate or panicled. Flowers small white, red or yellow, often tomentose. Sepals free, or rarely the laterals connate forming a short mentum, and adnate to the column foot. Petals narrower. Lip sessile on the end of the column foot, not mobile. Column short, rarely long, foot longer or shorter, arms short rounded incurved. Pollinia 8, pyriform or ovoid attached to a viscid disc in fours.

Distribution—Tropical Asia. About 200 species.

§ Stems of several or many internodes, rhizome none.

§ 1. Eriura. Stems tall leafy, leaves long narrow distichous. Flowers very small and numerous in subterminal racemes, woolly. Laterals sepals short and broad, mentum short.

Stems 2–4 inches tall, leaves narrow .. 1. *E. obliqua*.

Stems a foot and a half, leaves large.

Lip midlobe of 2 linear processes.. 2. *E. bidens*.

Lip midlobe broad denticulate lobes 3. *E. iridifolia*.

Lip midlobe subreniform .. .. 4. *E. major*.

§ 2. Mycaranthes. Stems leafless elongate cylindric. Leaves few terminal, racemes subterminal flowers small woolly. 5. *E. longifolia*.

§ 3. Dilochiopsis. Stems tall leafy.
Flowers in subterminal panicles. .. 6. *E. Scortechinii.*

§ 4. Bambusifoliae. Stems tall leafy. Leaves thin or rarely coriaceous. Racemes short, lateral few flowered. Flowers glabrous.

Racemes 4 to 6 flowered, leaves broad .. 7. *E. leptocarpa.*

Racemes 1-2 flowered, leaves linear, or narrow.

Flowers solitary an inch across .. 8. *E. pendula.*
Flowers few, ½ inch long .. .. 9. *E. pilifera.*

§ 5. Trichotosia. Stems leafy terete. Leaves hairy rarely glabrescent. Racemes lateral hirsute. Flowers sessile or nearly so. Bracts longer than the ovary. Mentum long.

Racemes long and pendulous, plants very hairy

Flowers about 20, an inch long .. .. 10. *E. vestita.*
Flowers about 12, ½ inch long .. .. 11. *E. ferox.*

Racemes very short, few flowered, hairy.

Stems a foot or more.

Sepals acute lanceolate .. .. 12. *E. cristata.*
Sepals oblong obtuse .. .. .. 13. *E. velutina.*

Stems short very villous.

Leaves lanceolate close .. .. 14. *E. aporina.*
Leaves linear .. .. 15. *E. hispidissima.*

Stems and leaves glabrescent.

Stems tall. Flowers very short numerous .. .. 16. *E. poculata.*

Stems about a foot long or less. Flowers 2 or 3.

Leaves ovate lanceolate .. .. 17. *E. oligantha.*
Leaves lanceolate. Lip entire .. 18. *E. monticola.*

Leaves linear lanceolate. Lip 3 lobed.

Stems swollen at the base .. .. 19. *E. tuberosa.*
Stems not swollen .. .. .. 20. *E. gracilis.*
Stems ⅛ inch long leaves ovate fleshy 21. *E. rotundifolia.*

§ 6. Hymeneria. Stems short or long, pseudobulbs or terete crowded. Leaves few subterminal. Racemes many flowered from below the leaves. Flowers nearly or quite glabrous. Mentum short.

Stems terete, racemes horizontal of many small flowers. Bracts small.

Racemes very dense flowers white or pinkish.

Stem ½ inch thick. Lip apex truncate — 22. *E. floribunda.*
Stem 1 inch thick. Lip apex retuse — 23. *E. densa.*
Racemes lax flowers yellow .. .. — 24. *E. tenuiflora.*
Stems swollen upwards, leaves terete — 25. *E. cepifolia.*

§ 7. Aeridostachyae. Stems very short hidden in large brown sheaths leaves long coriaceous. Racemes with a long nude base. Flowers small densely covered with brown fur, crowded. Mentum long.

Lip entire spathulate.

Leaves very large, 18 inches long .. — 26. *E. Aeridostachya.*
Leaves narrow at the base, 9 inches long .. .. — 27. *E. brunea.*
Lip 3 lobed. Sheaths of stem coriaceous — 28. *E. lorifolia.*
Lip 3 lobed. Sheaths thin papery .. — 29. *E. dasystachys.*

§ 8. Stellatae. Stems swollen pseudobulbous, short covered with thin sheaths. Raceme long, flowers large distant, nearly glabrous.

Lip midlobe long acute.

Stems hardly swollen. Flowers white — 30. *E. stellata.*
Stems nearly globose. Flowers striped pink .. .. .. — 31. *E. striolata.*
Lip midlobe shorter than side lobes — 32. *E. clata.*

§ 9. Dendrolirion. Rhizome long, stems distant short, pseudobulbous (except *E. pannea*). Flowers few large woolly.

Scape 6 inches long .. .. .. — 33. *E. albido-tomentosa.*

Scapes short 1-3 flowered.

Pseudobulbs conic crowded. Leaf terete	34. *E. teretifolia.*
Stems not pseudobulbous. Leaves 3 linear	35. *E. pannea.*
Pseudobulbs obovate tapering upwards	36. *E. leiophylla.*

Stems swollen or terete. Bracts large rarely small. Flowers nearly or quite glabrous.

§ 10. Bractescentes. Raceme many flowered with large white or green bracts.

Bracts oblong white. Racemes erect ..	37. *E. bractescens.*
Bracts oblong, raceme reflexed	38. *E. suaveolens.*
Bracts lanceolate short	39. *E. Endymion.*
Bracts ovate. Stems fusiform	40. *E. xanthocheila.*
Stems thick cylindric.	
Flowers yellow, purple striped ..	41. *E. recurvata.*
Flowers white. Bracts green ..	42. *E. latibracteata.*

§ 11. Nutantes. Stems terete. Leaves 2 or 3 terminal. Flowers solitary lateral or terminal.

Stems tufted. Flowers terminal white	43. *E. nutans.*
Stems from branched rhizomes. Flowers terminal	44. *E. neglecta.*
Rhizome far creeping, stems distant. Flowers lateral below the leaves ..	45. *E. longerepens.*
Stems short pseudobulbs covered with sheaths. Scapes erect. Flowers small, pubescent, mentum short.	
Leaves oblanceolate.	
Lip 3 lobed. Stems short fusiform thick	46. *E. pudica.*
Lip 3 lobed. Stems with several distant sheaths	47. *E. lancifolia.*
Lip entire. Stems cylindric.	48. *E. saccifera.*
Leaves linear	49. *E. Maingayi.*

§ 1. Eriura.

1. E. obliqua, Lindl. Journ. Linn. Soc. III. 1839, p. 55. Small tufted plants, stems 2-4 inches tall. Leaves linear lanceolate bilobed

3 inches long ¼ inch wide coriaceous. Racemes 1-3 slender subterminal erect, 3 inches long, woolly, base nude. Flowers 20 or more crowded very small. Bracts ovate acuminate, as long as the ovary. Sepals ovate white woolly. Petals narrower lorate. Lip as long as the sepals three lobed, side lobes ovate falcate acute, midlobe cordate acute hardly longer, with a conic yellow callus in the centre, white with usually a row of violet spots on the side lobes. Column short and apex abruptly dilate white. Anther pink, arms none. Capsule terete slender half an inch long. Hook. fil. Flor. Brit. Ind. V. 790. *Mycaranthes obliqua*, Lindl. Bot. Reg. 1840, Misc. 77.

Singapore: (Cuming), Kranji (Ridley 174); Johor: Batu Pahat (Native Collector). Distrib. Borneo.

2. E. BIDENS, Ridl. Journ. Linn. Soc. XXXII. 289. Stems tufted, a foot tall, stout leafy. Leaves 9 to 18 inches long 1½ inch wide distichous subcoriaceous unequally bilobed. Scapes 3 from the upper axils over a foot long woolly. Flowers small numerous. Bracts ovate acuminate ⅛ inch. Upper sepal ovate ⅛ inch long obtuse, laterals broadly ovate mentum short, all pubescent on the backs, greenish, spotted with purple in front and with purple tips. Petals linear pink. Lip small greenish yellow, side lobes rounded blunt, midlobe of two linear processes, short, disc white raised, with two red keels. Column short with a rather long foot. Capsule terete an inch long splitting along one side.

Perak: Larut Hills 2-4000 feet alt. (Ridley 2883). Endemic.

3. E. IRIDIFOLIA, Hook. fil. Fl. Brit. Ind. V. 790. Ic. Pl. 2067. Caespitose, almost stemless or stems a foot long leafy. Leaves 9 to 18 inches long ¾ inch wide, subcoriaceous. Scapes 18 inches from the upper axils stout, pubescent. Flowers numerous ½ inch long. Bracts ovate reflexed. Upper sepal oblong ovate obtuse, laterals much broader ovate obtuse oblique, backs chestnut red pubescent, fronts yellow blotched red. Petals linear nearly as long as upper sepal, denticulate yellow, blotched with red. Lip 3 lobed, lateral lobes oblong ovate blunt yellow with red spots, midlobe bifid lobes broad irrigularly laciniate yellow with red spot, callus at the base of lip 3 lobed, white, a broad elevated band white on the disc, with two narrow yellow ridges on either side, centre of midlobe thickened white.

Perak: Gunong Batu Putih (Wray); Bujong: Malacca (Ridley). Endemic.

4. E. MAJOR, Ridl. Trans. Linn. Soc. IV. p. 237. Stems tufted tall over a foot long rather flattened nearly ½ inch through. Leaves lanceolate acuminate very unequally bilobed, 7 inches long ¾ inch wide thinly coriaceous, sheaths 1-1½ inch long. Racemes 4 subterminal slender a foot long woolly. Flowers very numerous ⅓ inch long,

pedicels and ovary ¼ inch long woolly. Bracts glabrous ovate acuminate ⅛ inch long. Upper sepal elliptic, laterals broader obtuse woolly on the back greenish yellow inside. Petals oblong obtuse. Lip 3 lobed, side lobes subfalcate oblong white with pink spots, midlobe clawed subreniform deep maroon purple, with a white pulverulent callus, and a lobed callus white powdery at base of the lip. Column short with a long foot, white edged purple. Capsule elliptic fusiform ¼ inch long, pedicel as long. *E. Kingii*, Hook. fil. Fl. Brit. Ind. V. 790. Ic. Pl. 2066. *E. Scortechinii*, Stapf. Trans. Linn. Soc. IV. p. 237.

Perak: Larut Hills 3800-5000 feet alt. (King's Coll. 3311), (Scortechini, Ridley); Pahang: Kluang Terbang (Barnes). Endemic.

§ 2. Mycaranthes.

5. E. longifolia, Hook. fil. Fl. Brit. Ind. V. 790. Ic. Pl. 2068. Stems several tufted 2 to 8 inches tall clothed in dry white sheaths. Leaves 2-3 terminal narrow linear acuminate very unequally bifid 4 to 8 inches long ⅜ inch wide. Scapes solitary shorter than the leaves subterminal, 3 to 6 inches long woolly. Flowers very small white verticillate sessile. Upper sepal oblong obtuse, laterals woolly triangular ovate, much larger, mentum broad rounded. Petals narrow lanceolate. Lip saccate lanceolate ovate acute entire fleshy shorter than than the sepals papillose. Column short and broad, foot very short. Capsule elliptic sessile ⅛ inch long.

Perak: Larut Hills (Ridley); Ulu Batang Padang (Wray); Pahang: Kluang Terbang (Barnes). Endemic.

§ 3. Dilochiopsis.

6. E. Scortechinii, Hook. fil. Fl. Brit. Ind. V. 809. Ic. Pl. 2082. Stems woody 3 to 6 feet tall ⅛ inch through, base terete sheathed. Leaves linear acuminate very unequally bilobed, 6 inches long ¼ inch wide, sheaths ribbed felted. Inflorescence panicled 4-5 inches long and broad tomentose, axillary. Bracts broad papery ¼ inch long. Floral bracts narrower and shorter, lanceolate. Flowers sessile white or pink. Sepals orbicular, ovate obtuse, laterals ovate, pubescent. Petals broad oblong obtuse. Lip 3 lobed, side lobes oblong obtuse large, midlobe shorter rounded or obcordate, disc and centre of midlobe thickly tomentose. Column short, foot longer. Capsule elliptic sessile ½ inch long.

Perak: (Scortechini), Gunong Batu Putih (Wray); Pahang: Kluang Terbang (Barnes). Endemic.

§ 4. Bambusaefoliae.

7. E. leptocarpa, Hook. fil. Ic. Pl. 2077. Fl. Brit. Ind. V. 805. Stems stout robust 2-3 feet tall, thick, internodes 1 to 1½ inch long. Leaves linear lanceolate or lorate obtuse, 6-8 inches long ½-1½ inch wide thinly coriaceous. Racemes laterals 1½ inch long, 4-6 flowered. Bracts ovate lanceolate ¼-½ inch long. Pedicel and ovary ½-1 inch long. Upper sepal lanceolate, laterals ovate lanceolate falcate acuminate, ⅓ inch long, yellow tinted with brown outside, straw colour within. Petals linear oblong obtuse. Lip spathulate clawed, lateral lobes short, midlobe rounded mealy keels on disc between, side lobes 3. Column very short. Capsule cylindric obtusely angled 2-3 inches long.

Perak (Scortechini, King's Collector 10339). Distrib. Borneo.

8. E. pendula, Ridl. Journ. Roy. As. Soc. S. Br. Vol XXXIX. p. 78. Stems terete 2 or 3 feet long ⅛ inch through leafy. Leaves narrowly linear lanceolate acuminate 4 inches long ¼ inch wide sheaths dilate upwards ¾-1 inch long. Racemes lateral hardly ½ inch long, with several lanceolate acute red brown bracts ½ inch long. Flowers solitary nearly an inch across white. Pedicel and ovary ½ inch long, red. Upper sepal oblong obtuse, laterals broadly ovate reflexed, mentum short very broad and blunt. Petals oblong rounded as broad or broader than the upper sepal. Lip shortly clawed broad obovate rounded, side lobes indistinct, midlobe longer broad, keels two curved laminae on the disc. Column short, foot long.

Selangor: at the caves Kwala Lumpur (Kelsall); Perak (Scortechini Drawing). Distrib. Borneo.

9. E. pilifera, Ridl. Journ. Linn. Soc. XXXII. 299. Stems weak subterete leafy 18 inches long. Leaves thin lanceolate acuminate unequally bilobed 3 inches long ¼ inch wide sheaths nearly an inch long. Racemes lateral very short few flowered, with 4 empty yellow pubescent bracts ½ inch long at the base. Ovary and pedicel ⅝ inch long pubescent. Flowers nearly ½ an inch long. Upper sepal oblong lanceolate obtuse, laterals falcate acute, mentum short obtuse all white. Petals as long lanceolate. Lip shorter narrow cuneate, side lobes rounded, midlobe hardly longer obscurely 3 lobed covered with short yellow hair. Column curved. Capsule terete 2 inches long.

Perak: Larut Hills (Ridley 2887). Endemic.

§ 5. Trichotosia.

10. E. vestita, Lindl. Bot. Reg. 1844, Misc. 76. 1845, t. 2. Stems 2 to 3 feet long. Leaves lanceolate or oblong lanceolate very unequally bilobed, 4 to 8 inches long 1-1½ wide dull green densely covered with red hair especially beneath, sheaths terete 1½ inch long

red hairy. Racemes flexuous a foot long, covered with red hair. Flowers an inch long, ½ an inch apart sessile about 20. Bracts orbicular mucronate hairy ¼ inch long. Upper sepal lanceolate, laterals similar, mentum about ½ as long stout curved, red. Petals narrow as long lanceolate linear obtuse, pinkish. Lip 3 lobed with a narrow base, side lobes obtuse rounded median cordate longer all crimson except edges of side and midlobe white. Column straight, narrow dilated at the very large stigma, foot as long as column straight crimson.

Singapore: Sungei Brih (Ridley 1687); Johor; Pahang: Kluang Terbang (Barnes); Pekan (Ridley 1373); Telang River (Machado); Malacca: Merlimau (Derry 137); Mount Ophir (Ridley); Selangor: Sepang (Ridley); Perak (Scortechini) B. P. D. (King's Collector 7947); Penang: Telok Bahang (Curtis). Endemic.

11. E. FEROX, Bl. Mus. Bot. Lugd. Bat. II. p. 184. Stems 2-6 feet long ½ an inch through. Leaves lanceolate acuminate to ovate lanceolate 3 inches long 1-1¼ wide covered with stiff hairs sheaths ¾-2 inches long, arms with very stiff red hairs. Racemes 3 inches long hairy, about 12 flowered. Flowers ½ inch long, sessile greenish yellow. Bracts ovate ¼ inch long. Sepals ovate obtuse sparingly hairy, mentum as long as ovary. Petals subspathulate. Lip cuneate spathulate, side lobes waved, crenate, midlobe emarginate with 2-3 rough calli. Hook. fil. Fl. Brit. Ind. V. 806. *Trichotosia ferox*, Bl. Bijdr. 342. Lindl. Gen. and Sp. Orch. Pl. 132. De Vriese Ill. t. 9. and t. 11. f. 5.

Perak (Scortechini), Larut Hills (Ridley 5192); Selangor: Bukit Kutu (Ridley); Penang (Lobb. 336), (Maingay); Kedah: Gunong Jerai (Ridley 5124). Distrib. Java, Borneo. Rocks and trees at 2 to 5000 feet altitude.

12. E. CRISTATA, Ridl. Journ. Roy. As. Soc. S. Br. Vol. XXXIX. p. 78. Stem a foot tall. Leaves lanceolate acuminate oblique 3 inches long ½ inch wide coriaceous almost glabrous above hairy beneath sheaths glabrescent when old very hairy when young ½ an inch long. Racemes short ¼ inch long very hairy lowest bracts cup shaped, upper ones ovate lanceolate acute, ½ inch long much longer than the short ovary. Flowers 2 or 3 ½ an inch long. Sepals lanceolate acute covered with red hair, mentum as long blunt. Petals linear obtuse, much narrower. Lip with a very long claw pubescent at the base, spathulate, apex rounded retuse glabrous except for the ends of 3 raised veins which are covered with short clubbed hairs. Column base pubescent.

Penang (Curtis 1696); Lankawi; Terutau (Curtis 1696). Endemic.

13. E. VELUTINA, Lindl. Bot. Reg. 1840, Misc. p. 86. Stems 9 to 18 inches tall. Leaves 2-3 inches long ½ to 1 inch wide, lanceolate nearly glabrous above hairy beneath sheaths hairy ½ inch long. Racemes very short few flowered. Bracts lanceolate hairy ¼ inch long. Flowers sessile ½ inch long pale yellow, with red hairs. Upper sepal oblong obtuse, lanceolate larger, mentum short broad blunt. Petals narrower lanceolate blunt. Lip spathulate rounded retuse at apex, side lobes short incurved rounded. Column long slender pink, enlarged at stigma. Hook. fil. Fl. Brit. Ind. V. 807.

Singapore (Cuming), Kranji: Jurong (Ridley 376); Johor: Batu Pahat (Ridley); Malacca: Mount Ophir, Nyalas (Goodenough 1320). Endemic.

14. E. APORINA, Hook. fil. Fl. Brit. Ind. V. 808. Ic. Pl. 2081. Stems 2 to 6 inches, densely villously hirsute. Leaves lanceolate subacute crowded distichous ¼ to ½ inch long. Bracts small ovate acute. Flowers ½ inch long glabrescent. Sepals broadly ovate obtuse, mentum as long. Petals narrowly subspathulate. Lip broadly clawed panduriform ciliolate, side lobes small rounded midlobe emarginate. Capsule elliptic ¼ inch long.

Selangor: Bukit Kutu (Ridley); Perak (Scortechini), Gunong Batu Putih (King's Coll. 8069), Larut Hills (Ridley). Endemic.

15. E. HISPIDISSIMA, Ridl. Journ. Bot. XXXIV. 1898, 213. A small slender plant with slender hairy stems 6 inches tall tufted. Leaves linear acuminate densely silky hairy ½-¾ inch long ⅛ inch wide. Racemes flexuous hairy ¾ inch long, numerous. Flowers 5-6 sessile ⅛ inch long. Bracts lanceolate ovate. Sepals lanceolate hairy outside. Petals lanceolate glabrous smaller. Lip oblong entire glabrous. Capsule ⅛ inch long hairy.

Selangor: Ulu Langat (Goodenough). Endemic.

16. E. POCULATA, Ridl. Journ. Linn. Soc. XXXII. 305. Stems two feet tall graceful, ⅛ inch through base swollen. Leaves lanceolate acuminate acute coriaceous glabrous inaequilateral 3 inches long, ½ inch wide, sheaths scabrid 1 inch long, mouths red hairy. Racemes hardly ½ an inch long, many flowered with a red hairy cup-shaped bract at the base. Flowers small short ¼ inch long greenish. Bracts ¼ inch long ovate pilose nearly as long as the flowers. Pedicel ⅛ inch long. Upper sepal lanceolate to subacute hairy outside yellowish within, laterals broader ovate more acute keeled, mentum as long as the sepals saccate broad obtuse. Petals smaller lanceolate acute thin glabrous. Lip small white with a linear cuneate orange base, apex emarginate enlarged, edges fimbriate. Column thickened upwards purple.

Perak: Larut Hills (Ridley 2881); Kedah: Gunong Jerai at 3000 feet alt. (Ridley). Var. *opirensis*. Racemes longer, one inch long. Lip apex acute. Mount Ophir (Ridley 3151). Endemic.

17. E. OLIGANTHA, Hook. fil. Ic. Pl. 2079. Fl. Brit. Ind. V. 807. Stems 10 to 12 inches tall, as thick as a goose-quill hairy towards the top. Leaves thickly coriaceous ovate lanceolate, beneath tomentose or glabrous 2-2½ inch long obtuse. Flowers 1-2 on a very short peduncle sessile ½ inch long sparsely pubescent. Racemes ½ to ⅔ inch long. Bracts widely ovate longer than the ovary. Sepals lanceolate, laterals ovate acuminate. Petals oblanceolate acute, mentum spur-like. Lip pubescent with a long narrow claw blade obovate spathulate shortly 3 lobed lobes rounded, median thick crenulate. Column sparsely hairy.

Penang (Maingay). Endemic.

18. E. MONTICOLA, Hook. fil. Fl. Brit. Ind. V. 806. Stems 12 to 18 inches nearly ¼ inch long. Leaves about 10, lanceolate acuminate, 3 inches long ½ inch wide, glabrous, sheaths an inch long hairy. Flowers 2 in a short raceme an inch long lower bract cup-like, floral bract ovate lanceolate. Upper sepal lanceolate, acute, laterals similar mentum short nearly half as long as the sepals, all white, sparingly pubescent outside. Petals narrower oblong, white glabrous. Lip oblong subspathulate pubescent apex rounded whitish base and edges pink apex, orange or pink. Column short broad, narrowing to the pubescent crimson foot. Anther purple. Capsule ½ inch long subglobose ellipsoid. *E. biflora*, Lindl. Journ. Linn. Soc. III. 56. *Trichotosia biflora*, Griff. Notulae III. 331. t. 315.

Malacca: Mount Ophir (Griffith, Maingay, etc.), Pulau Aor (Feilding); Selangor: Bukit Hitam (Kelsall); Perak: Larut Hills (Curtis), (Scortechini Drawing 148).

Var. *hirsuta* leaves softly tomentose beneath, flowers hirsute, lip broader more obcuneate lobes broader. Perak (Scortechini). Endemic.

19. E. TUBEROSA, Hook. fil. Ic. Pl. 2080. Fl. Brit. Ind. V. 807. Stem 6 to 8 inches tall, swollen at the base, glabrescent. Leaves linear lanceolate acute very coriaceous glabrous, 2-3 inches long. Flowers 2 on a very short peduncle ⅔ inch hairy. Bracts large ovate sheathing. Sepals ovate lanceolate, mentum saccate. Petals sparsely hairy narrow spathulate. Lip pubescent claw long blade obovate three lobed, midlobe retuse with a hairy patch in the centre. Column pubescent.

Perak (Scortechini). Endemic.

20. E. GRACILIS, Hook. fil. Ic. Pl. 2078. Fl. Brit. Ind. V. 806. Stems several tufted 4 to 6 inches long curved glabrous. Leaves

narrow linear lanceolate 2 inches long, ¼ inch wide glabrous young sheaths pubescent. Flowers 2 or 3 in a short raceme. Basal bract cup-shaped, upper ones lanceolate acuminate large ¼ inch long. Sepals lanceolate acute, laterals curved, mentum as long as the ovary, all white covered with red hairs. Petals narrower lanceolate acute. Lip spathulate with a long claw crimson blade shortly three-lobed, midlobe oblong thickened yellow hairy. Column hairy. Capsule elliptic hairy.

Singapore: Bajau (Ridley); Pahang: Tahan River (Ridley); Perak (Scortechini), Hermitage Hill (Ridley); Penang: Government Hill (Curtis 1965). Endemic.

21. E. ROTUNDIFOLIA, Ridl. Journ. Roy. As. Soc. S. Br. Vol. XXXIX. p. 78. Rhizomes forming a matted mass very slender, stems ⅛ inch long covered with thick fleshy obovate bars, blunt hairy ¼ inch long. Flowers ¼ inch long solitary on a short pedicel with 2 cupular bracts the upper one longer than the ovary. Upper sepal oblong ovate, laterals much broader, mentum rather large rounded. Petals oblong obtuse tip broader three lobed side lobes small, midlobe rounded all denticulate greenish yellow with a central ochreous bar and some purple spots on each side. Column short foot long olive green, anther orange conic 1 celled, front edge emarginate.

Penang: above the Waterfall (Curtis). Allied to *E. dasyphylla*, Par. of India and *E. microphylla*, Bl. Java.

§ 6. HYMENERIA.

22. E. FLORIBUNDA, Lindl. Bot. Reg. 1843, Misc. 43. 1844, t. 23. Journ. Linn. Soc. III. 60. Stems tufted 5 to 9 inches tall ¼ inch grooved. Leaves subterminal linear lanceolate or lanceolate 5-8 inches long ¾ to 1 wide. Racemes laterals from below the leaves 3 inches long, densely floriferous. Axillary bract ovate, brown. Floral bracts very small ovate reflexed acute. Flowers ¼ inch long. Upper sepal ovate acute, laterals obliquely triangular, mentum twice as long. Petals lanceolate acute, midlobe spathulate, apex broadly truncate. Column short foot long. Capsule terete slender ½ inch long. Hook. fil. Fl. Brit. Ind. V. 792.

Singapore (Prince, Wallich's coll. 7408), Sungei Buluh (Ridley 1634), Seletar (Ridley 3928); Johor: Tanah Rumto; Pahang: Tahan River (Ridley 2051); Perak (Scortechini); Selangor: Sepan (Ridley); Kedah: Gunong Jerai at 3000 feet (Ridley). Distrib. Tenasserim, Borneo.

23. E. DENSA, Ridl. Journ. Linn. Soc. XXXI. 281. Stems crowded thick cylindric 8 inches long, one inch thick. Leaves four subterminal 11 inches long, 2 inches wide, lanceolate lorate. Racemes

lateral 9 inches long, rachis pubescent dense flowered. Bracts ovate a line long. Flowers small. Upper sepal ovate, laterals ovate triangular. Petals ovate narrower, all white or tinted with pink. Lip side lobes falcate acute, midlobe spathulate apex retuse obscurely three lobed. Column thick, foot long white with red edges. Anther red.

Perak: Larut Hills (Ridley), Hermitage Hill (Curtis). Distrib. Borneo.

A large plant with much denser raceme, side lobes of lip longer, midlobe retuse, and stigma smaller, than in *E. floribunda*.

24. E. TENUIFLORA, Ridl. Journ. Linn. Soc. XXXII. 291. Stems terete, 6 to 8 inches long ¼ inch thick. Leaves subterminal lanceolate acute thickened 3-4 inches long ¾ inch wide. Racemes 3 or 4 lateral slender covered with flowers. Flowers thin numerous yellow glabrous, ¼ inch long, pedicels ¼ inch long. Bracts ⅛ inch long Petals shorter similar. Lip shorter lanceolate acute, yellow with a red central blotch. Column short.

Singapore: Galang (Ridley 9153), Toas; Johor: Batu Pahat (Ridley); Pahang: Pekan (Ridley); Perak: Hermitage Hill (Curtis). Endemic.

25. E. CEPIFOLIA, Ridl. Journ. Linn. Soc. XXXI. p. 282. Stems numerous crowded, 3 inches tall suddenly thickened upwards from a narrow base, green. Leaves 4 from the thickened nodes terete acute 6 inches long. Racemes axillary slender 6 inches long pubescent. Flowers numerous small white. Bracts lanceolate $\frac{1}{16}$ inch long. Sepals ovate pubescent, laterals triangular ovate blunt, mentum short, broad. Petals lanceolate narrower. Lip side lobes small acute erect, midlobe longer spathulate cuneate. Column short thick violet.

Perak (Scortechini). Distrib. Borneo.

§ 7. AERIDOSTACHYAE.

26. E. AERIDOSTACHYA, Rchb. fil. Lindl. Journ. Linn. Soc. III. p. 48. Rhizome stout stems crowded, 2 inches long thick, covered below with coriaceous sheaths. Leaves 3 or 4 stiffly coriaceous, broadly lanceolate 18 inches 2 inches across. Scapes from the upper axils one foot long, lower half nude pubescent stout raceme dense flowers numerous crowded brown pubescent. Bracts very small lanceolate. Pedicel and ovary pubescent. Upper sepal ovate oblong, laterals triangular ovate, mentum twice as long. Petals linear lorate blunt falcate. Lip oblong obtuse apex rounded pubescent within, crisped. Capsule elliptic ¼ inch long.

Singapore: Bukit Mandai; Johor: Tanah Runto (Ridley 1653); Malacca, Perak. Endemic.

27. E. BRUNEA, Ridl. Journ. Linn. Soc. XXXII. 297. Leaves narrowly lanceolate acute narrowed at the base, coriaceous, 9 inches long ¾ inch wide. Scapes 8 to 12 inches long, lower half nude covered with red wool, raceme very dense flowers small outside brown, inside yellowish. Bracts ovate acute, red tomentose very small. Ovary and pedicel $\frac{3}{16}$ long. Sepals sparingly red tomentose outside, upper one small elliptic obtuse, laterals much larger ovate oblique mentum long. Petals linear obtuse curved. Lip thin, claw long narrow, blade ovate spathulate edges undulate.

Perak: Hermitage Hill (Curtis), Larut Hills (Ridley); Selangor: Bukit Hitam (Ridley). Endemic.

28. E. LORIFOLIA, Ridl. Journ. Linn. Soc. XXXII. 296. Rhizome nearly an inch thick woody pseudobulbs an inch long covered with large sheaths. Leaves lorate acute 15 inches long 1-1¼ inch wide coriaceous. Scapes 18 to 24 inches long, lower half nude glabrous, raceme pubescent rather lax. Flowers very numerous ¼ inch long yellow. Bracts minute ovate. Pedicel and ovary ¼ inch long pubescent. Sepals red pubescent outside, upper one short ovate, laterals broader, mentum long pendulous clubbed. Petals wider ovate thinner glabrous. Lip shorter oblong, side lobes very short, midlobe longer oblong obtuse edge undulate. Column very short, foot long.

Kedah: Gunong Jerai (Ridley); Selangor: Bukit Kutu (Ridley). Endemic.

29. E. DASYSTACHYS, Ridl. Journ. Linn. Soc. XXXIII. 296. Rhizome thick woody, pseudobulbs 3 inches long conic cylindric, covered with thin papery sheaths. Leaves about 4 oblanceolate narrowed into a petiole, 8 inches long an inch wide, thinly coriaceous. Scapes 2 erect 7 to 8 inches long, base stout nude with 6 or 7 scattered ovate bracts. Flowers crowded in a dense raceme about 3 inches long, rusty pubescent ¼ inch long. Bracts ¼ inch long, ovate lanceolate acute as long as the ovaries. Sepals ovate acute, mentum as long conic thick blunt. Petals shorter linear acuminate, subobtuse. Lip thin, claw linear long, side lobes short rounded crisped, midlobe larger ovate obtuse crisped.

Pahang: Kwala Pahang (Ridley 1575). Endemic.

§ 8. STELLATAE.

30. E. STELLATA, Lindl. Bot. Reg. t. 904. Stems short hardly pseudobulbs about 2 inches long covered with sheaths. Leaves several lanceolate acute or oblanceolate with a long petiole, jointed to a prolonged portion of the sheath, a foot or more 1¾ to 2 inches wide. Raceme from the side of the stem 18-30 inches long. Flowers scattered ¾ inch long, pedicels short. Bracts lanceolate sheathing acuminate ¾-1 inch long. Sepals lanceolate acuminate acute white with

brown pubescence on the back, mentum short. Petals narrower and shorter. Lip side lobes erect rounded white edges crimson, with 3 raised veins yellow on the disc, midlobe linear oblong or lanceolate acute yellowish white. Column curved broad white with crimson edges. Anther helmet shaped. Lindl. Bot. Mag. t. 3605. *E. fragrans,* Rchb. fil. Bot. Zeit. XXII. 415. Hook. fil. Fl. Brit. Ind. V. 794. *Dendrobium perakense,* Hook. fil. Fl. Brit. Ind. V. 712. Ic. Pl. 2019.

Singapore: Chua Chu Kang (Ridley); Pahang: Kota Glanggi (Ridley); Perak (Scortechini). Distrib. Sikkim, Tenasserim, Borneo.

31. E. STRIOLATA, Rchb. fil. Ill. Hort. (1888) p. 35. t. 48. Pseudobulbs close nearly globose 1½ inch long ¾ inch thick. Leaves 2 thick lanceolate tapering at the base acute, 9 inches long 1¾ inch wide. Scape rather stout about 15 inches tall. Flowers scattered an inch long fragrant. Bracts ovate lanceolate to lanceolate acute, ½ inch long. Sepals lanceolate acute white with pink stripes, mentum short and broad. Petals linear lanceolate greenish white. Lip side lobes blunt rounded white with a pink edge and veins midlobe long narrow linear acute greenish tipped pink. Column broad foot about as long, arms obsolete. Anther helmet shaped. Capsule elliptic half an inch long.

Singapore: Kranji (Ridley); Johor: Batu Pahat (Ridley). Distrib. Borneo and Sumatra.

32. E. ELATA, Hook. fil. Ic. Pl. 1848. Fl. Brit. Ind. V. 794. Pseudobulbs elongate thick, covered with sheaths. Leaves two developed oblanceolate a foot long, coriaceous. Scape stout much longer. Bracts large lanceolate longer than the short ovary. Flowers fairly large, numerous ovary and base of perianth pubescent. Upper sepal lanceolate, laterals falcate lanceolate acute, mentum obtuse. Petals linear oblong obtuse falcate. Lip similar, lateral lobes incurved obtuse, midlobe shorter wrinkled, disc with 3 raised ridges. Column slender foot pubescent.

Perak (Scortechini).

§ 9. DENDROLIRION.

33. E. ALBIDO-TOMENTOSA, Lindl. Gen. and Sp. Orch. Pl. p. 66. Rhizome far creeping, pseudobulbs ovoid compressed of about 4 internodes 2 inches long, an inch or more apart. Leaves 3 lanceolate acute narrowed at the base 5 inches long, 1½ inch wide. Scapes from the lowest node 6-8 inches long with numerous close sheathing leaves at the base, rachis woolly. Flowers scattered on the upper part woolly outside. Bracts lanceolate half an inch long. Sepals half an inch long, backs covered with white wool, inner surface sea-green, upper one

lanceolate acute laterals widely triangular acute spotted with red at the base, mentum short blunt. Petals half as long linear lanceolate acute green. Lip pandurate lanceolate lobes short oblong obtuse, midlobe oblong quite blunt densely spotted purple, a V shaped callus yellow in the midlobe, with a dark purple spot in the fork. Column long white with a pink spot at the base, arms short rounded. Anther conic obtuse. Ridley Journ. Linn. Soc. XXXII. 301. Rchb. fil. Xenia Orchid ii. t. 136. *Dendrobium albido-tomentosum*, Bl. Bijdr. p. 345.

Lankawi (Curtis); Kedah: Gunong Jerai (Ridley). Distrib. Siam, Java.

34. E. TERETIFOLIA, Griff. Notul. III. 298. Ic. Pl. As. t. 3000. Pseudobulbs conic ¼ inch long densely set on a slender rhizome, enclosed in a sheath. Leaf solitary terete 4 or 5 inches long. Scape enclosed in the basal sheath woolly 2 inches long. Flowers 1-2. Bracts small ovate ⅛ inch long. Pedicel ¾ inch long. Upper sepal lanceolate ½ inch long, laterals broadly triangular, with a large rounded mentum woolly outside. Petals linear woolly. Lip dull red. *E. pellipes*, Hook. fil. Fl. Brit. Ind. V. 802.

Malacca: Mount Ophir (Ridley); Perak: Larut Hills (Curtis), Gunong Batu Putih (Wray 469); Penang: Government Hill (Curtis 2429). Distrib. Borneo. On trees at 2 to 6000 feet altitude.

35. E. PANNEA, Lindl. Bot. Reg. XXVIII. 1842, Misc. 79. Rhizome long and wiry. Stems not swollen half an inch long 2 inches apart. Leaves 3 succulent narrow linear curved acuminate subterete 3-7 inches long. Scape from the axil of one of the upper leaves 1 inch woolly 2 flowered. Bract large ovate. Upper sepal lanceolate acute, laterals triangular half an inch long woolly outside yellow ochre. Mentum short blunt. Petals shorter lanceolate yellow. Lip entire oblong acute fleshy purple with a mealy yellow centre. Column slender green. Capsule narrow fusiform an inch long, perianth persistent. Lindl. Journ. Linn. Soc. III. 50. Hook. fil. Fl. Brit. Ind. V. 804.

Singapore: Kranji, Serangoon (Ridley); Johor: Batu Pahat (Ridley); Malacca: Bukit Bruang (Derry 286); Pahang: Tahan River (Ridley); Perak (Scortechini). Distrib. Borneo. Malay name, Kura Kubong.

36. E. LEIOPHYLLA, Lindl. Journ. Linn. Soc. III. 57. Rhizome branching. Stems pseudobulbs obovate tapering upwards and covered below with a reticulate sheath, 1 inch through at the base, about 2 inches apart. Leaves 2 lanceolate or lorate coriaceous 4 inches long ¾-1 inch broad. Flower solitary on a peduncle enclosed in a long sheath 2 inches long. Upper sepal lanceolate pale ochre yellow, laterals broadly triangular acute half inch long, mentum thick long

rounded, all ochre covered outside with red pubescence. Petals narrower light yellow pubescent lorate lanceolate obtuse. Lip fleshy lanceolate side lobes obscure rounded central ridge and disc on midlobe papillose all deep purple. Column tall yellow foot short, arms very short blunt incurved. Anther helmet shaped. Hook. fil. Fl. Brit. Ind. V. 809.

Penang: on rocks Government Hill (Maingay, Curtis). Distrib. Borneo, Java.

§ 10. Bractescentes.

37. E. bractescens, Lindl. Bot. Reg. 1841, Misc. p. 18. 1844, t. 29. Stems pseudobulbous sausage-shaped of two internodes 2 inches long ½-¾ inch thick crowded. Leaves two terminal, oblong lanceolate subacute, thinly coriaceous 4-9 inches long ½ inch wide. Raceme from upper part of the pseudobulb 6 inches tall, lax, flowers about 15. Bracts at the base of raceme oblong broad blunt, floral ones narrower lanceolate oblong obtuse white half an inch long. Rachis and pedicels slender ½ inch long, pubescent. Dorsal sepal lanceolate acute, laterals falcate lanceolate half an inch long mentum conic. Petals narrower lanceolate acute, all white. Lip oblong, three lobed lateral lobes long falcate acute lanceolate rose pink, midlobe cuneate obovate white, ridges on the disc two short thickened forwards, median longer. Column long, foot short white with a pink spot at base. Hook. fil. Fl. Brit. Ind. V. 796.

Singapore: Pulau Tekong (Ridley 2034), Chan Chu Kang (Ridley, Cuming); Johor: Batu Pahat (Ridley); Pahang: Pekan (Ridley 1046); Kedah: Pulau Song Song, Lankawi (Curtis). Distrib. Tenasserim, Borneo.

38. E. suaveolens, Ridl. Journ. Linn. Soc. XXXII. p. 292. Pseudobulbs sausage shaped of 6 internodes, 4 inches long 1¼ inch through. Leaves 3-4 lanceolate obtuse coriaceous 6 inches long 1¼ wide narrowed into a petiole an inch long. Raceme stout recurved many flowered, from below the lowest leaf. Bracts ¼ inch long, oblong acute sprinkled with black pubescence. Flowers large fragrant. Sepals ovate blunt ¾ inch long mentum long oblong compressed. Petals ovate acute nearly as large, all white rose tinted. Lip spathulate claw long side lobes rounded erect blunt, pink, midlobe short broadly ovate fleshy with a central warty yellow callus. Column short foot long.

Johor: Sedili River (E. D'Almeida); Perak: Bujong Malacca (Ridley). Endemic.

39. E. Endymion, Ridley Journ. Linn. Soc. XXXII. 295. Stems connate cylindric of 2 or 3 internodes, crowded 3 inches long. Leaves 8 inches long 1½ inch wide lanceolate subacute narrowed

at base coriaceous. Racemes stout erect 6 inches long base nude. Flowers numerous ½ inch across, pedicels thick pubescent. Bracts lanceolate ½ as long. Sepals white backs pubescent, upper widely lanceolate subobtuse, laterals ovate acute, falcate, mentum short broad blunt. Petals ovate white. Lip, side lobes falcate acute red, with a fleshy callus. Column straight.

Singapore: Seletar (Ridley). Distrib. Borneo.

40. E. XANTHOCHEILA, Ridl. n. sp. Stems tufted on a stout rhizome ¼ inch through, about half an inch apart cylindric fusiform 5 inches long, internodes few. Leaves 3 or 4 subterminal lanceolate bright green 5-6 inches long, 1½ inch wide coriaceous. Racemes several from the axils below the leaves about 3 inches long. Flowers numerous fragrant ½ inch long, pedicels pubescent ½ inch long. Bracts ovate ⅛ to ⅜ inch long, white. Dorsal sepal ovate laterals falcate ovate, mentum twice as long, oblong blunt. Petals lanceolate acute, narrower, all white. Lip clawed long side lobes erect oblong obtuse, or acute curved, rather long, dull red, midlobe ovate truncate yellow, keels 3 on disc between side lobes red, apices thickened, median prolonged on midlobe. Column straight foot long anther small.

Selangor: near Klang (Ridley 10272). Endemic.

41. E. RECURVATA, Hook. fil. Fl. Brit. Ind. V. 797 Ic. Pl. 2070. Stems tufted, thick cylindric of 2-5 internodes 4-6 inches tall ⅜ inch through. Leaves 3 to 5 elliptic lanceolate narrowed into a petiole, 6 to 8 inches long 1½ to 2 inches wide. Raceme lateral 6 inches pubescent, many flowered. Bracts ovate lanceolate as long as the pedicels yellow. Pedicel and ovary pubescent ⅔ inch long. Flowers ⅔ inch across. Sepals recurved falcate lanceolate acuminate, yellow with purple stripes, mentum large rounded. Petals lanceolate acuminate yellow with purple stripes. Lip lateral lobes short rounded pale purple, midlobe obcordate rounded yellowish, two keels on the disc.

Perak (King's Collector).

42. E. LATIBRACTEATA, Ridl. Journ. Linn. Soc. XXXII. 293. Stems a foot long, crowded, terete ¼ inch thick. Leaves 4 terminal lanceolate plicate acute thin 7 inches long 1¾ inch wide. Racemes 2 or 3, compact 2 inches long, sessile. Bracts ovate acute nearly half an inch long bright green. Flowers about 12 nearly glabrous, half an inch long, pedicels and ovaries ¼ inch long. Upper sepal lanceolate acute, laterals falcate keeled, mentum short and broad. White with red at bases. Petals shorter and broader obtuse, ovate, white. Lip shorter, broad, lobes from the base, curved obtuse, madder pink, midlobe longer broadly rounded ovate retuse, white, 2 raised keels, and two elevated nerves between them on the disc ending in a deep pink

patch on the centre of the midlobe. Column rather long broad, stigma large oblong, foot rather short.

Negri Sembilan: Seremban (Dr. Braddon). Endemic.

43. E. NUTANS, Lindl. Bot. Reg. 1840, Misc. p. 83. Stems tufted, about a foot tall ½ inch through cylindric covered with brown sheaths. Leaves 2 or 3, subterminal lanceolate acuminate acute, base narrowed, 6 inches long one inch wide. Flowers solitary ½ inch long nodding from above the uppermost leaf, in a large brown bract ½ inch long. Peduncle ½ an inch, with a small lanceolate bract below the pedicel, which is as long. Upper sepal oblong obtuse, laterals ovate falcate, mentum thick curved blunt. Petals lanceolate obtuse narrower, all white. Lip side lobes falcate acute broad, midlobe obovate obscurely 3 lobed at tip, white tinted pink keels three, median running on to midlobe and three crisped laterals only to base of midlobe. Column long curved, foot much shorter, white with an orange cushion at the base of the foot. Capsule cylindric 3 inches long, ¼ inch thick. Lindl. Journ. Linn. Soc. III. 58. Hook. fil. Fl. Brit. Ind. V. 800.

Singapore (Cuming), Toas (Ridley); Johor: Tanah Runto (Ridley 1639), Ulu Batu Pahat (Kelsall); Malacca: Mount Ophir (Ridley); Perak: Bujong Malacca (Ridley); Penang (Maingay); Kedah: Gunong Jerai (Ridley). Endemic.

44. E. NEGLECTA, Ridl. Journ. Linn. Soc. XXXI. p. 283. Rhizome much branched forming dense mats on tree branches. Stems erect base terete thickened upwards 5 inches tall ¼ inch thick above. Leaves lanceolate acute flaccid 1-2, 3½ inches long, ¾ inch wide. Flowers solitary on a short pedicel, hardly projecting beyond the large brown bract, terminal. Sepals lanceolate laterals nearly ovate lanceolate ¼ inch long, mentum short broad blunt. Petals shorter lanceolate, all tinted with rose. Lip as long or longer, lateral lobes falcate acute pink, midlobe oblong quadrate or nearly obovate, apex rounded retuse yellow, keels 3 two running to base of midlobe, median one to end of midlobe and there waved. Column rather long, pink with a square papilla on the foot.

Singapore: Seletar (Ridley 2037); Johor: Tanah Runto (Ridley); Perak (Scortechini). Distrib. Lingga, Borneo.

45. E. LONGEREPENS, Ridl. Journ. Linn. Soc. XXXI. 282. Rhizome creeping far ¼ inch thick, stems as thick terete, 4 inches long, and 6 or 7 inches apart. Leaves 3 or 4 on the end, lanceolate to ovate lanceolate acute or acuminate petiolate 6 inches long 2 inches wide, petiole ½ inch long. Raceme from below the leaves ½ inch long to 3 flowered. Bracts half an inch long fleshy coloured. Sepals ovate lanceolate ½ inch long laterals longer with an oblong mentum, pinkish yellow with a darker median line. Petals much smaller lanceolate

acute yellowish. Lip oblong entire truncate white. Column club-shaped white with a red spot at base. Capsule cylindric 2 inches long.

Singapore: Kranji, Sungei Morai (Ridley 2036). Distrib. Borneo. Epiphytic or terrestrial.

46. E. PUDICA, Ridl. Journ. Linn. Soc. XXXII. 394. Stems crowded cylindric thick of 5 internodes 1½ inch long ¼ inch through, covered with brown papery sheaths. Leaves 2 oblanceolate subacute 6 inches long 1¾ inch wide coriaceous. Racemes from the lower nodes 2 inches long. Flowers numerous crowded in the upper half small. Bracts ovate ⅓ length of the ovary. Ovary and pedicel ⅛ inch long woolly. Upper sepal elliptic obtuse pubescent on the back, laterals much larger ovate obtuse. Petals as long and about as broad as the upper sepal, elliptic obtuse curved, all white. Lip short and broad 3 lobed side lobes short falcate subacute, edges violet, midlobe longer broadly oblong truncate, white with two large oblong flat pink-edged processes on the disc between the lateral lobes. Column broad and long, foot short.

Singapore: Changi (Ridley); Johor: Kwala Kahang (Kelsall). Endemic.

47. E. LANCIFOLIA, Hook. fil. Fl. Brit. Ind. V. 804. Ic. Pl. 2075. Stems 4 inches long, rather thick, covered with large sheaths. Leaves two oblanceolate subacute 6 inches long, 1 inch wide wide, petiole more than an inch long. Racemes 2 or 3 axillary short slender, pubescent. Flowers small about 6 sessile, scattered. Bracts ovate ⅛ inch long. Upper sepal elliptic or ovate obtuse, latérals much broader ovate falcate obtuse, mentum very short, pubescent. Petals about as long as the upper sepal elliptic. Lip three lobed, side lobes rather large falcate blunt minutely papillose with two large oblong fleshy calli on the inner side midlobe longer ovate. Column rather large, foot slender curved. Capsule oblong three angled pubescent ½ inch long, erect. *E. dissitiflora,* Ridl. Journ. Linn. Soc. XXXII. p. 292.

Johor: Batu Pahat; Pahang: Tahan River (Native Coll. in Herb. Bot. Sing.); Perak (King's Coll.). Endemic.

48. E. SACCIFERA, Hook. fil. Fl. Brit. Ind. V. 797. Ic. Pl. t. 2071. Stems cylindric 3 inches long crowded. Leaves two or three elongate, oblanceolate acuminate terminal a foot or more long 1-1½ inch wide narrowed into a petiole. Scape subterminal slender six inches long. Flowers glabrous ⅛-½ inch long, "dull pink, claret and yellow." Bracts oblong lanceolate. Upper sepal ovate oblong, laterals very braod rounded, mentum three time as long as the upper sepal saccate. Petals elliptic subacute. Lip entire clawed spathulate tomentose. Column very short foot long.

Perak: Gunong Batu Putih (Wray 1215). Endemic.

49. E. Maingayi, Hook. fil. Fl. Brit. Ind. V 798. Ic. Pl. 2072. Pseudobulbs tufted fusiform or cylindric. Leaves 2 linear acuminate coriaceous, 3-4 inches long ½-⅝ wide, narowed at the base. Racemes much shorter than the leaves, 2-3 inches long. Flowers ½ inch across. Bracts oblong as long as the pedicels. Upper sepal oblong, laterals triangular ovate subfalcate acute, mentum short rounded. Petals as long as sepals linear oblong. Lip 3 lobed obovate, side lobes rounded crenulate, midlobe small rounded, with a woolly callus in the centre, and three keels on the disc between the side lobes.

Penang: Government Hill (Maingay). Endemic.

Excluded Species.

E. Meirax, N. E. Br. is *Porpax Meirax,* King.

E. minutiflora, Ridl. is *Poaephyllum pauciflorum,* Ridl.

E. pulchella, Lindl. is *Tylostylis rigida,* Bl.

E. pygmaea, Hook. fil. is *Ceratostylis eriaeoides,* Hook. fil.

9. Porpax, Lindl.

Very small plants, pseudobulbs discoid with reticulate sheaths, crowded. Leaves 2 caducous. Flowers one or two sessile on the top of the pseudobulbs. Sepals connate into a tube. Petals free shorter. Column short wingless, foot adnate to sepals. Pollinia 8.

Species two Indian.

P. Meirax, King and Pantling Ann. Bot. Roy. Calc. VIII. 115. Pl. 158. Pseudobulbs clustered nearly ¼ inch across discoid covered with thin radiating fibres connected by a membrane, reticulate when dry. Leaves 2 elliptic oblong petiolate ½-1 inch long. Flowers ½ inch long from the centre of the bulb, brown. Bracts large ovate acute. Sepals connate into a tube apices ovate, awned. Petals shorter oblong lanceolate blunt. Lip ovate orbicular at base, midlobe oblong obtuse. Column short, foot twice as long. Pollinia 8.

Kedah: Gunong Jerai at 4000 alt. on rocks (Ridley) out of flower. Distrib. Sikkim, Tenasserim.

10. Tylostylis, Bl.

Rhizome creeping with distant pseudobulbous stems or several nodes. Leaves coriaceous sessile. Racemes axillary. Flowers medium size. Sepals oblong elliptic pubescent spreading. Petals smaller. Lip articulate to the foot of the column more or less mobile fleshy. Column long curved, foot very short.

T. rigida, Bl. Fl. Jav. Praef. VI. Rhizome far creeping, pseudobulbs an inch apart, flattened lanceolate narrowed at the base 1½ inch

long, 1 inch across, ¼ inch through. Leaves 2-3 to each pseudobulb broadly lanceolate coriaceous obtuse bifid. Raceme subterminal 3 inches long base nude, flowers an inch across widely expanded 20 or more, opening singly. Bracts orbicular recurved persistent ⅛ inch long. Upper sepal lanceolate obtuse, laterals broader oblique. Petals spathulate lanceolate falcate smaller, all ocre yellow, finely woolly. Lip heart shaped mobile pubescent blunt ¼ inch long maroon edges paler, with three ridges meeting in the midlobe. Column long arched yellow foot short broad fleshy, maroon at apex, arms very short. Anther conic.

Callostylis rigida, Bl. Bijdr. 340. t. 74. Lindl. Gen. and Sp. Orch. 129.

Eria pulchella, Lindl. Bot. Reg. 1841, Misc. 52. Journ. Linn. Soc. III. 51. Hook. fil. Fl. Brit. Ind. V. 801.

Singapore: Sungei Morai, Pulau Tekong (Ridley 1793); Johor: Batu Pahat (Ridley), Sungei Kahang (Kelsall): Sungei Ujong: Malacca (Cuming), Bukit Batu Tiga (Ridley); Perak (Scortechini); Penang (Curtis 1735); Kedah: Gunong Jerai (Ridley). Distrib. Borneo, Java, Rhio. Native names "Para chinduai;" "Sakat bigus."

11. Phreatia.

Small epiphytes tufted. Leaves distichous articulate narrow. Scapes axillary slender. Flowers minute green or white. Sepals equal, with a short mentum. Petals smaller. Lip sessile or clawed jointed on the base or foot of the column. Column very short and broad. Anther low, pollinia 8 obovoid, attached to a viscid disc. Capsule very small ovoid.

Species about ten. Indian, Malayan and Oceanic.

Stems very short or none.

Rhizome stout, leaves nearly a foot long ..	1.	*P. myosurus.*
Rhizome none, leaves lanceolate	2.	*P. listrophora.*
Rhizome none, leaves linear very small ..	3.	*P. minutiflora.*
Stems about 2 inches long	4.	*P. nana.*

1. Ph. myosurus, Lindl. Journ. Linn. Soc. III. 61. Rhizome very stout. Leaves strap shaped unequally bluntly bilobed 8 to 12 inches long ½ inch wide. Scape over a foot long, more than half nude. Flowers very numerous crowded white. Bracts lanceolate acuminate ⅛ inch long. Sepals obtuse mentum very short, rounded. Petals similar small. Lip sessile oblong or cuneate, apex three lobed. Column short and broad. Rostellum entire. Capsule elliptic fusiform ⅛ inch long. Hook. fil. Fl. Brit. Ind. V. 810. *Eria myosurus,* Rchb. fil. Bonplandia V. 54.

Perak: Larut Hills 3000-5000 feet alt. (Ridley, Scortechini, King's Collector).

Forma minor. Three inches tall. Leaves $\frac{1}{8}$ inch across, same locality (Ridley). Distrib. Borneo.

2. Ph. LISTROPHORA, Ridl. Journ. Linn. Soc. XXXII. 307. No rhizome, tufted plants with abundant roots. Stem one inch tall. Leaves 6 inches tall hardly $\frac{1}{4}$ inch across lanceolate acute unequally bilobed, narrow into a petiole. Scape slender 7-8 inches tall more than half nude. Flowers minute white. Bracts lanceolate acuminate $\frac{1}{8}$ inch long. Sepals ovate acute. Petals oblong ovate. Lip with a linear claw and reniform lamina. Rostellum bidentate. Capsule oblong $\frac{3}{16}$ inch.

Perak: Larut Hills at 5000 alt. (Ridley); Lankawi: Gunong Raya (Curtis). Endemic.

3. P. MINUTIFLORA, Lindl. Journ. Linn. Soc. III. 82. Rhizome none, stems very short tufted. Leaves linear obtuse $1\frac{1}{2}$ to 2 inches long, $\frac{1}{16}$ to $\frac{1}{8}$ inch wide, distichous. Scapes $1\frac{1}{2}$-2 inches long slender basal half nude. Bracts lanceolate acuminate $\frac{1}{16}$ inch long. Flowers very minute white, raceme rather lax. Sepals ovate acute, petals lanceolate. Lip ovate cordate concave. Column broad short and thick. Capsule elliptic $\frac{1}{8}$ inch long. Hook. fil. Fl. Brit. Ind. V. 811.

Singapore: Mangroves, Kranji, Jurong (Ridley 4679); Johor: (native collector); Selangor: Kwala Lumpor caves (Ridley); Perak: Larut Hills at 4000 alt. (Ridley). (A form with short recurved very thick leaves crowded together). Distrib. Sumatra, Borneo.

4. P. NANA, Hook. fil. Fl. Brit. Ind. V. 811. Ic. Pl. Stems tufted $1\frac{1}{2}$-2 inches long. Leaves narrowly ensiform acute, $\frac{1}{2}$-$\frac{3}{4}$ inch long, $\frac{1}{16}$ inch wide. Spikes capillary as long as the leaves. Bracts ovate acute. Flowers $\frac{1}{20}$ inch across. Sepals broadly ovate. Petals obtuse. Lip ovate obtuse.

Perak (Scortechini, King's Collector); Penang: Richmong Pool (Ridley). Endemic.

12. AGROSTOPHYLLUM, Bl.

Tufted epiphytes, stems tall flattened. Leaves long linear, distichous coriaceous articulated numerous. Flowers in dense heads, subterminal with numerous bracts, white very small. Sepals ovate, no mentum. Petals narrower. Lip base saccate, blade ovate. Column short, foot none arms prominent or not. Pollinia 8 attached to a small viscus. Species about ten, India, Malaya and Seychelles.

Heads of flowers long compact	1. *A. Majus.*
Stem broad flattened.	
Stem terete slender	2. *A. callosum.*
Heads of small flexuous spikelets	3. *A. glumaceum.*

1. A. MAJUS, Hook. fil. Fl. Brit. Ind. V. 824. Ic. Pl. 2096. Stems numerous forming a tuft 2 or 3 feet through 2-3 feet tall, ½ inch wide. Leaves lanceolate lorate blunt, 8 inches long ½ inch wide, sheaths 2 inches long. Heads of flowers an inch across compact. Bracts broad ovate, inner ones smaller. Flowers ¼ inch across. Sepals ovate acute keeled. Petals much narrower linear all white. Lip base saccate with a horizontal partition covering the top, and a transverse one covering the front, white, partitions madder red, blade ovate acute white. Column thickened upwards, arms indistinct.

Singapore: Selctar (Ridley); Pahang: Pekan (Ridley 1540); Perak (Scortechini), Gopeng (King's Collector 1127), Larut Hills (Ridley). Distrib. Sumatra.

2. A. CALLOSUM, Rchb. fil. Seem. Fl. Vit. 296. Stems woody terete below slightly flattened above 2½ feet tall. Leaves linear obtuse 4-7 inches long ¼ inch wide sheaths about an inch long edged black. Heads of flowers ½-1½ inch through compact. Flowers ¼ inch across, pink. Sepals ovate orbicular. Petals orbicular. Lip 3 lobed mid-lobe obreniform emarginate, with a large divided subbasal callus.

Selangor: Bukit Hitam (Kelsall), Rawang (Ridley). I have not seen the flowers of this, but the plant so closely resembles *A. callosum* of India in all other respects, that I do not think it can be distinct. Distrib. Himalaya to Burma.

3. A. GLUMACEUM, Hook. fil. Fl. Brit. Ind. V. 821. Ic. Pl. 2095. Stems tufted short flattened 6 inches long ½ inch wide. Leaves distichous lowest sheaths like, upper two with long flat sheaths 2-3 inches and thin grass like blade linear acuminate 2 feet long half an inch wide. Head 1½ inch through lax, racemes very numerous flexuous. Flowers small white, ovary short sprinkled with black wool. Bracts ovate mucronate. Sepals short ovate. Petals linear. Lip base saccate, laterals lobes erect acute, limb large ovate, all white. Column rather tall, arms spreading triangular acute, edged crimson. Stigma with a tongue shaped process projecting from it. Anther beak orange. Capsule narrow oblong ¾ inch long.

Selangor: Rawang and Pahang Track, Sungei Ujong (Native collector); Perak (Scortechini 1810); Ulu Bubong (King's Coll. 10876). Endemic.

13. POAEPHYLLUM, Ridl.

Epiphytes with slender terete stems. Leaves narrow. Racemes lateral short, few flowered. Flowers very small. Sepals lanceolate,

laterals connate forming a mentum. Petals shorter. Lip clawed claw adnate to the column foot by its edges, spathulate longer than sepals. Column short foot slender, arms long acute. Anther ovate beaked. Pollinia 4 subequal ovoid. Species one. Sp. 1.

P. PAUCIFLORA, n. sp. Stems 2 feet long slender few. Leaves linear obtuse unequally bifid 2 inches long, $\frac{1}{8}$ inch wide, sheaths $\frac{1}{2}$ inch long deeply split. Racemes hardly exsert from the sheath, with a few minute flowers white. Bracts ovate acuminate half as long as the pedicel. Sepals lanceolate acuminate keeled, laterals connate at base. Petals linear obtuse. Lip spathulate with a long claw, claw narrow channelled, blade ovate acute with a thickened line on the disc. Column short stout, arms acute. Capsule cylindric very shortly stalked $\frac{1}{4}$ inch long. *Agrostophyllum pauciflorum*, Hook. fil. Fl. Brit. Ind. V. 824. Ic. Pl. 2097. *Eri minutiflora*, Ridl. Journ. Linn. Soc. XXXII. 297.

Johor: Batu Pahat (Ridley); Pahang: Tahan River (Ridley 2369); Perak: Hulu Kwantu (Scortechini). Endemic.

14. CERATOSTYLIS, Bl.

Small epiphytic plants, stems not pseudobulbous, simple or branched sheathed, sometimes rush-like. Leaves narrow coriaceous or fleshy, one or two. Flowers very small rarely large, solitary or tufted, white or pink. Lateral sepals forming a mentum. Petals narrower. Lip adnate to the column foot by a claw, blade entire fleshy. Column short, broadest at the top. Stigma very large drawn out upwards in two long arms. Foot of column long. Anther small 2-celled. Pollinia 8.

Species about 15. Indian, Malayan and Pacific.

Stems erect succulent rush-like .. .. .. 1. *C. gracilis.*
Stems simple erect, no rhizome .. .. .. 2. *C. lancifolia.*
Stems very short tufted.
Leaves lanceolate, flowers $\frac{1}{2}$ inch across 3. *C. eriaeoides.*
Leaves linear, flowers $\frac{1}{4}$ inch .. .. 4. *C. cryptantha.*
Stems branched.
Leaves large lanceolate, sheaths trabeculate 5. *C. robusta.*
Leaves linear, sheaths reticulate .. .. 6. *C. clathrata.*
Leaves elliptic lanceolate, sheaths punctate 7. *C. puncticulata.*
Stems much branched pendulous .. .. 8. *C. pendula.*

1. C. GRACILIS, Bl. Bijdr. p. 306. Stems tufted terete dark green enclosed at the base in dry brown sheaths, 3 to 9 inches long. Leaf solitary subterminal erect terete $\frac{1}{2}$-$1\frac{1}{2}$ inch long. Flowers in a tuft lateral from the base of the leaf, produced singly $\frac{1}{4}$ inch long

pinkish, pubescent. Bracts ovate brown. Sepals lanceolate obtuse dull pink pubescent mentum fairly large scrotiform. Petals smaller lanceolate yellowish. Lip claw short, shoe shaped pubescent pale with an orange tip, blunt. Column short foot nearly as long, arms erect blunt much larger than the rest of the column, ovary pubescent. Capsule subsessile oblong. Rchb. fil. Xenia Orch. II. p. 92. t. 127. *C. teres,* Rchb. fil. Bonplanda II. 1854. p. 89. Hook. fil. Fl. Brit. Ind. V 825. *C. Malaccensis,* Hook. fil. l.c. 825. Ic. Pl. 2098.

Johor: Batu Pahat (Ridley); Selangor: Pahang Track (Ridley); Malacca: Ophir (Griffith); Perak: Larut Hills (King's Collector 2333); Province Wellesley: Bukit Serayah (Ridley); Kedah: Gunong Jerai (Ridley). Distrib. Java.

2. C. LANCIFOLIA, Hook. fil. Fl. Brit. Ind. V. 826. Ic. Pl. 2102. Stems 2 to 4 inches long tufted erect unbranched covered with sheaths. Leaf solitary narrow linear lanceolate acute. Flowers solitary $\frac{1}{3}$ inch across, pedicel and ovary pubescent. Sepals oblong lanceolate acute. Petals narrower and shorter. Mentum short bilobed. Lip narrow, base oblong apex thick dagger-shaped. Column arms taller than the anther oblong obtuse.

Perak (Scortechini). Endemic.

3. C. ERIAEOIDES, Hook. fil. Ic. Pl. 2074 B. Dwarf tufted plant stems $\frac{1}{2}$ inch long covered with sheaths. Leaf solitary $1\frac{1}{2}$-2 inches long linear oblanceolate blunt thick. Scape as long filiform one flowered. Flowers $\frac{1}{2}$-$\frac{2}{3}$ inch across tomentose. Sepals ovate lanceolate. Mentum short. Petals oblanceolate acute. Lip much shorter than sepals saccate at the base, limb tongue shaped with 2 pubescent keels on the disc. Stigma very broad horseshoe-shaped. *E. pygmaea,* Hook. fil. Fl. Brit. Ind. V. 804.

Perak (Scortechini, Wray). Endemic.

4. C. CRYPTANTHA, Ridl. Journ. Linn. Soc. XXXII. 309. Dwarf tufted plant stems $\frac{1}{2}$ inch long. Leaves 2 linear subacute 5 inches long $\frac{1}{8}$ inch wide. Scapes filiform $\frac{3}{8}$ inch long woolly one flowered. Flowers $\frac{1}{4}$ inch across on a short woolly stalk. Bract minute ovate. Sepals ovate obtuse white pubescent. Petals narrower ovate mucronate oblique deep crimson with the long mucro and a median line white. Lip claw long linear, side lobes blunt broad upcurved pubescent midlobe reniform, cream colour, a fleshy ovate callus on the disc. Column short, foot very long slender arms incurved very obscure. Capsule elliptic erect $\frac{1}{4}$ inch long.

Perak: Hermitage Hill, Larut Hills (Ridley); Selangor: Pahang Track (Curtis); Penang: Government Hill (Curtis, Ridley 7240). On trees at an altitude of about 2000 feet. Endemic.

5. C. ROBUSTA, Hook. fil. Fl. Brit. Ind. V. 827. Ic. Pl. t. 2103. Stems stout branched 8-10 inches long or more, rooting, sheaths ½-¾ inch long across nerved. Leaf 4-5 inches long lanceolate acuminate ⅝ to 1 inch across. Flowers solitary ½ inch long pale yellow, peduncle slender pubescent. Sepals ovate obutse pubescent. Mentum spurlike apex enlarged obscurely bilobed. Petals elliptic lanceolate obtuse. Lip spathulate with a long narrow claw, apex acute fleshy. Column arms erect large taller than the anther.

Perak at 4900 feet alt. (Wray). Endemic.

6. C. CLATHRATA, Hook. fil. Brit. Ind. V. 825. Ic. Pl. 2099. Stems stout tufted erect or prostrate ascending, branched 3-4 inches long, covered with short obtuse sheaths reticulate with raised nerves. Leaves linear ½-1 inch long fleshy channelled. Flowers minute axillary solitary on a slender pedicel pilose. Bract ovate. Sepal upper oblong, laterals ovate gibbous no mentum, pilose. Petals oblong lanceolate. Lip saccate at the base, incurved blade obcordate truncate emarginate with two keels. Column arms short rounded.

Perak (Scortechini), Batang Padang (Wray); Pahang: Kluang Terbang (Barnes). Endemic.

7. C. PUNCTICULATA, Ridl. Journ. Roy. As. Soc. S. Br. Vol. XXXVII. p. 79. Stems slender weak curved 3-4 inches long, but little branched. sheaths short ampliate mucronulate minutely punctate. Leaves narrowly elliptic lanceolate blunt petiolate, 2 inches long, ¼ inch wide. Flowers in pairs on short slender pedicels with minute bracts. Sepals lanceolate acute. Lip spathulate with an acute thickened tip.

Perak: Larut Hills at 5000 feet alt. (Ridley). Endemic. Buds too young.

8. C. PENDULA, Hook. fil. Fl. Brit. Ind. V. 826. Ic. Pl. 2100. Stems tufted pendulous and rooting, with many wiry roots at the base slender 3-12 inches long, covered with dry chestnut sheaths. Leaves linear narrow obtuse 1 inch long, ⅛ inch wide coriaceous. Flowers in distant tufts of ovate mucronulate brown bracts, white very small. Ovary and pedicel pubescent. Sepals ovate acute or subacute. Petals lanceolate narrower. Lip with a narrow claw blade ovate lanceolate, pubescent at base, yellowish in centre. Column arms thick rounded.

Johor: Batu Pahat (Ridley); Pahang: Pekan (Ridley 1400): Selangor: Ginting Peras, Kajang (Ridley); Perak: Larut Hills (King's Coll. 3847); Penang: West Hill (Ridley). On lofty trees. Distrib. Borneo, Celebes, Philippines.

15. CHRYSOGLOSSUM, Bl.

Terrestrial rhizome creeping. Pseudobulbs cylindric conic, bearing a petiolate leaf. Scape usually tall, from the rhizome. Flowers

scattered, medium sized. Sepals and petals subsimilar, lateral sepals falcate. Lip three lobed, adnate to the short foot of the column, spurless. Column tall arched, with a very short foot, arms linear oblong from the midlobe of the column, anther 2 celled. Pollinia 2.

Species 4, Indo-Malayan.

C. villosum, Bl. Bijdr. 338. Leaves ovate large villous 6-9 inches long, 3-5 wide very shortly petioled, or directly sessile on the pseudobulb. Scapes twice as long as the leaves hairy. Flowers 9 or 10, distant. Sepals and petals oblong obtuse, apiculate yellow with purple stripes. Lip shorter than the column side lobes oblong as long as the widely ovate midlobe, two strong keels in the centre. Lindl. Gen. and Sp. Orch. 13. Bl. Orch. Arch. Ind. 162. Pl. 47.

Perak (Scortechini). Distrib. Java.

16. Collabium, Bl.

Rhizome creeping, pseudobulbs narrow 1 leaved. Leaf plicate. Scape from the rhizome, flowers scattered small. Sepals narrow, laterals connate forming a mentum. Petals narrower. Lip three lobed clawed. Column short, winged, no arms, foot long anther hemispheric. Pollinia 2, no disc.

Sp. 2. Malayan.

C. nebulosum, Bl. Bijdr. 357. Leaf broadly lanceolate or ovate marbled with dark and light green 6-7 inches long 4½ inch wide. Scape purple 18 inches. Flowers about 20 small. Ovary and pedicel ⅜ inch, red. Sepals falcate acute, mentum long blunt. Petals bent in the middle as long as sepals but narrower, all yellow with broad red edges. Lip white side lobes oblong falcate obtuse erect, midlobe large orbicular undulate, 2 short blunt oblong ovate laminae meeting in middle and 2 low ridges on disc. Column sigmoid short, yellow with transverse red bar, wings low. Lindl. Gen. and Sp. Orch. Pl. 96. Miquel. Fl. Nederl. Ind. III. p. 678. Choix des Plantes XXVI.

Perak: Larut Hills (Derry), (Ridley). Dense woods at 3000 feet alt. Distrib. Java.

Excluded species, *C. Wrayi*, Hook. fil. is *Thecostele maculosa*, Ridl.

17. Plocoglottis, Bl.

Terrestrial herbs, with a creeping rhizome. Leaves solitary, or several on a stem, ovate lanceolate short or long petioled. Scape tall from the rhizome flowers few or many in a raceme. Sepals lanceolate. Petals longer or shorter. Lip shorter clawed, flexible, limb oblong. Column short and broad, foot very short, arms none. Anther ovate. Pollinia 4, each pair with a caudicle and rounded disc, both containing pollen grains.

Species 6 or 7 Malayan.

Leaf solitary rarely 2 on a stem.

Raceme glabrous	1. *P. Javanica.*
Raceme pubescent	2. *P. porphyrophylla.*
Leaves several on a stem	3. *P. foetida.*

1. P. Javanica, Bl. Bijdr. P. 381. t. 21. Leaf ovate lanceolate acute 9 inches long 3 inches wide, petiole 5 inches long. Scape 1-2 feet tall. Flowers about 30 glabrous. Bracts ovate acuminate ¼ inch long, ovary and pedicel twice as long. Upper sepal linear acute ½ inch long, laterals wider falcate. Petals narrow linear, as long, all yellow with red spots. Lip quadrate short truncate edges decurved side lobes minute semiovate obtuse, pale yellow. Column red stout, with large wings. Bl. Orch. Arch. t. 14. Mus. Bot. i. 46. Lindl. Gen. and Sp. Orch. Pl. 132. Hook. fil. Fl. Brit. Ind. VI. 22.

Singapore: Seletar (Ridley); Johor: Tengerah (Feilding), Hulu Batu Pahat (Kelsall 4035); Selangor: Ginting Bidai (Ridley 7778); Pahang: Kota Glanggi (Ridley 2055); Malacca: Batang Malacca (Goodenough); Perak: Larut Hills (Curtis), Scortechini 1232); Kedah: Gunong Jerai (Ridley). Damp woods to an altitude of 3000 feet.

2. Pl. porphyrophylla, Ridl. Trans. Linn. Soc. III. Journ. Linn. Soc. XXXII. 317. Rhizome short, pseudobulbs narrow 3 inches long. Leaf 1 rarely two elliptic lanceolate strongly nerved acute, 8-18 inches long 3-3½ inches wide, petiole 1-6 inches long, purple. Scape stout 1 to 3 feet tall, raceme lax pubescent. Bracts short ovate acuminate, less than ½ the length of the pedicel. Flowers about 30. Upper sepal lorate more than half an inch long yellow, laterals oblique larger oblong falcate yellow inner edges dark pink polished, pubescent outside. Petals narrow linear acuminate longer than the upper sepal yellow. Lip ¼ inch long quadrate, edges at base up curved yellow spotted black, fimbriate, apex very broad, two shining purple horns on disc. Column as long as lip dilate above yellow, crimson above. Capsule 1½ inch long oblong.

Singapore: Kranji, Seletar (Ridley); Johor: Tanah Runto (Ridley 1758), Ulu Kahang (Kelsall 4410); Pahang: Pekan (Ridley 3094); Negri Sembilan: Perhentian Tinggi (Ridley); Perak: Lumut, Dindings (Ridley 8033); Kedah (native collector) form entirely green. Sandy places usually near the sea. Distrib. Sumatra, Borneo.

3. Pl. foetida, Ridl. Journ. Linn. Soc. XXXII. 319. Rhizome stout. Leafy stems 3 feet long. Leaves 6 inches long 1½-1¾ inch long broadly lanceolate or elliptic lanceolate acute 3-5 nerved, petiole very short or none, sheaths terete. Scape tall 2-4 feet, pubescent. Flowers rather large, about 20 fetid. Bracts ¼ inch long ovate. Upper

sepal ¾ inch long ovate lanceolate acute, laterals twisted deflexed. Petals as long lanceolate acute, all orange with red spots. Lip as long and nearly as wide quadrate fleshy, 3 toothed, yellow. *Calanthe gigantea,* Hook. fil. Fl. Brit. Ind. V. 856.

Singapore: Bukit Timah (Ridley 6907); Johor: Tanjong Kupang (Ridley); Malacca: Jus (Goodenough 1505); Selangor: Rawang (Ridley), Kwala Lumpor (Curtis); Perak: Ulu Bubong (King's Coll. 10277); Dindings: Ulu Bruas (Curtis). Native name "Gulumbak;" occurs in wet spots in jungle.

Excluded Species.

Plocoglottis acuminata, Bl. The plants referred to this species in Fl. Brit. Ind. are *P. porphyrophylla,* Ridl.

18. Tainia, Bl.

Terrestrial herbs with a shortly creeping stem sometimes slightly swollen, succulent. Leaves herbaceous ovate or lanceolate petiolate solitary on the branches of the stem. Scape tall erect with few rather large flowers, from the creeping stem, lateral sepals adnate to the column foot forming a short mentum. Petals similar. Lip spur-like adnate to the column foot entire or three lobed. Column tall foot short, arms very short. Anther bilobed at the top. Pollinia 8 very unequal.

Species about 10. India and Malaya.

Sepals long acuminate.

Flowers pale yellow	1. *T. speciosa.*
Flowers deep purple	2. *T. Maingayi.*

Sepals lancolate acute.

Lip broad apex rounded	3. *T. latilingua.*
Lip apex ovate acute	4. *T. atropurpurea.*

1. T. speciosa, Bl. Bijdr. p. 354. Leaf lanceolate acuminate 6 inches long, 1½ wide, petiole slender 6 inches long. Scapes a foot long. Flowers 5 or 6 pedicels and ovaries ½ inch long. Bracts very narrow linear acuminate 1 inch long. Sepals lanceolate with a very long point 1½ inch long greenish yellow with red lines. Petals similar about as large. Lip ovate acute entire bright yellow with some red streaks on the inside. Column long arched foot short. Anther tip violet. Hook. fil. Fl. Brit. Ind. V. 822. *Eria speciosa,* Rchb. fil. Walp. Ann. VI. 269. *Mitopetalum speciosum,* Bl. Fl. Jav. Praef. 8. Mus. Bot. II. 185. Orch. Arch. Ind. 158. t. 50. f. 1.

Malacca: Mount Ophir (Ridley); Perak (Scortechini); Bujong Malacca (Curtis 329), Gunong Batu Putih (Wray); Kedah: Gunong Jerai (Ridley 5604). Distrib. Java. In woods at an elevation of 2-4,000 feet.

2. T. MAINGAYI, Hook. fil. Fl. Brit. Ind. V. 822. Ic. Pl. 2094. Stem stout covered with leaf fibres. Leaf elliptic lanceolate, acuminate, strongly nerved 8 inches long by 1½-2 wide, petiole short and thick 1 inch long. Scape stout about 2 feet tall. Flowers about 7 deep purple. Bracts lanceolate acuminate ¾ inch long. Pedicel and ovary as long. Sepals lanceolate with a long point, 2 inches long. Petals shorter. Lip 3 lobed pubescent, laterals lobes truncate oblong toothed, midlobe ovate acuminate acute sides toothed, and disc covered with short processes, three strong toothed keels in the disc between the side lobes. Column slender long, foot rather short.

Selangor: Bukit Kutu (Ridley); Perak: Bujong Malacca (Curtis 3290); Penang (Maingay); Kedah: Gunong Jerai (Ridley). In rocky woods, at an elevation of 2-3,000 feet.

3. T. LATILINGUA, Hook. fil. Fl. Brit. Ind. V. 822. Ic. Pl. 2093. Leaf elliptic acute, 8 inches long, 2½ inch wide, petiole as long. Scape 1½-2 feet long, flowers numerous. Bracts narrow as long as the ovary. Flowers an inch across. Sepals and petals and linear blunt about equal, falcate. Lip orbicular, lateral lobes short blunt, midlobe orbicular ridges 3 crenulate on the disc. Column as long as the foot. Anther hemispheric. Pollinia equal.

Perak (Scortechini).

4. T. ATROPURPUREA, Ridl. Journ. Linn. Soc. XXXII. 315. Rhizome succulent. Leaves ovate deeply cordate subacute 6 inches long 4 inches wide petiole thick 4 inches long. Scape a foot tall. Flowers an inch across. Bracts linear acuminate, longer than the pedicel. Sepals lanceolate acute. Petals as long and broader, all purple, or olive green with red streaks. Lip ovate acute obscurely lobed, lobes rounded, purple with the tip dark brown or white with brown spots base yellow, eight raised nerves and three parallel keels in the centre. Column rather short stout straight, foot longer wings rather large. *Nephlaphyllum grandiflorum,* Hook. fil. Fl. Brit. Ind. VI. p. 192. Ann. Roy. Bot. Gard. Calc. V. 23. Pl. 34. Ic. VIII. 105. Pl. 144. *Ipsea Wrayana,* Hook. fil. Fl. Brit. Ind. V. 812. Ic. Pl. 2085.

Perak: Larut Hills (Kunstler, Curtis, Ridley). Distrib. Sikkim.

Apparently various in colour, but all I have seen were of a deep almost uniform purple. *Ipsea Wrayana,* Hook. fil. cannot I think be an *Ipsea*. The specimens and figure seem to me to be closely allied to or identical with this plant.

19. ASCOTAINIA, Ridl.

Terrestrial pseudobulbs large conic bearing a lanceolate petiolate leaf. Scape from the rhizome erect tall. Flowers medium size racemose. Sepals lanceolate, laterals free no mentum. Petals smaller.

Anther oblong apex retuse. Pollinia 8, two pairs larger than the others oblong oblique lamelliform, four lower ones smaller ovate flattened disc small retuse. Sp. 2. Indian and Malayan.

A. Penangiana, n.sp. Pseudobulb 3 inches tall, and 2 inches through purple. Leaf lanceolate acuminate 12 inches long 3 inches wide, petiole 4-5 inches long. Scape 1½ foot tall, flowers 9 or 10 1 inch across. Sepals lanceolate acute, petals shorter pale yellow veined purple. Lip shorter 3 lobed, side lobes rounded, midlobe longer ovate, buff and rose colour, spotted with darker rose, spur short clubbed. Column dilate upwards. Anther obscurely 3 lobed. *Tainia Penangiana,* Hook. fil. Fl. Brit. Ind. V. p. 820. Bot. Mag. t. 7563.

Penang Hill, grassy banks (Curtis).

Very near *A. Hookeriana. Tainia Hookeriana,* King and Pantling Ann. Bot. Roy. Gard. Calc. VIII. p. 103, p. 143.

T. viridifusca, Lindl. belongs to the same genus.

20. Nephelaphyllum, Bl.

Terrestrial plant with a succulent rhizome, stems ascending. Leaves few cordate or ovate petiolate herbaceous. Scape terminal short. Flowers small racemose. Sepals free lanceolate no mentum. Petals similar. Lip with a clubbed spur, attached to the base of the column entire or three lobed, obtuse. Column short thick, footless. Anther 2 horned. Pollinia 8 unequal on a large oblong linear gland.

Species about 5. Indo-Malayan.

Leaves ovate, raceme dense .. .. .. 1. *N. pulchrum.*
Leaves triangular acuminate, raceme lax .. 2. *N. tenuiflorum.*

1. N. pulchrum, Bl. Bijdr. 373, t. 32. Stems 2 inches long purple. Leaves ovate cordate acute 3 inches long 2 inches broad brown marble darker. Raceme 2 inches long 7 flowered dense, ovary and pedicel thick ½ inch long. Sepals and petals reflexed lanceolate acute nearly ½ inch long olive green. Lip erect ¾ inch long, blade obovate entire or oblong, white with pink veins, with a raised central bar ending in two or three fimbriate ridges orange colour, spur pink dilate at tip. Column broad white spotted pink. Anther quadrate with 2 pink knobs. Blume Orch. Arch. Ind. 171. Pl. 61. fig. 1. Lindl. Gen. and Sp. Orch. Pl. 24. Rchb. fil. Xenia. Orch. 1. 216. t. 88. fig. 1. Bot. Mag. t. 5332. Hook. fil. Fl. Brit. Ind. V. 819. Ann. Bot. Gard. Calc. VIII. p. 105. pl. 145.

Singapore: Bukit Timah, Bukit Mandai (Ridley); Malacca: Mount Ophir, Bukit Sadanen (Derry); Perak: Larut Hills. Distrib. Java, Sikkim. In damp spots among rotting leaves.

2. N. tenuiflorum, Bl. Bijdr. p. 373. Stem more slender leaves triangular cordate acuminate, 2½-3½ inch long, 1-1 inch wide, brown marbled with darker colour. Scape graceful 4-7 inches tall.

Flowers 6 or 7 distant pendulous reversed. Bracts linear. Sepals and petal linear, purplish green. Lip white obscurely 3 lobed, side lobes short blunt, midlobe ovate truncate undulate, with a tuft of purple processes in the centre, spur clubbed purple. Column stout. Anther truncate knobbed. Bl. Orch. Arch. Ind. 172. t. 61. fig. 2. De Vr. Ill. Orch. t. 12. fig. 3. Hook. fil. Fl. Brit. Ind. V. 819.

Perak (Scortechini); Kedah: Gunong Jerai (Ridley). Distrib. Java, Borneo. In mossy spots about 4000 feet elevation.

Excluded Species.

N. grandiflorum, Hook. fil. *Tainia atropurpurea,* Ridl.

21. Spathoglottis, Bl.

Terrestrial, pseudobulbs conic 1-3 leaved. Leaves long petioled narrow plicate. Scape lateral. Flowers large showy yellow or crimson in lax racemes. Sepals free subequal. Petals similar or larger. Lip sessile, 3 lobed side lobes erect midlobe clawed, disc tubercled at base. Column long graceful arched, above dilate two winged, no foot. Anther 2 celled. Pollinia 8.

Species about ten India, China, Malaya, Australia and Pacific Isles.

Petals broad.

Flowers rose, or white, large plants .. 1. *S. plicata.*

Flowers yellow .. .. 2. *S. aurea.*

Petals narrow, small plant .. .. 3. *S. Handingiana.*

1. S. plicata, Blume Bijdr. 401. t. 76. Pseudobulb conic covered with fibres of old leaves. Leaves 2-4 feet long by 1-3 inches wide, lanceolate plicate petiole 6-18 inches long. Scape 12 inches long to 6 feet long, stout. Raceme many flowered. Bracts pink ovate or lanceolate. Flowers an inch across, crimson rarely lilac or white, self fertilized. Ovary and pedicel 1 inch long. Sepals ovate oblong acute. Petals broader. Lip lateral lobes oblong truncate apices thickened: calli, one obcuneate retuse hairy yellow, with two small white lobes on the sides; midlobe, base narrow apex dilated cuneate reniform emarginate. Column slender curved. Capsule oblong pendulous. Lindl. Gen. and Sp. Orch. Pl. 119. Hook. fil. Fl. Brit. Ind. V. 813. *S. lilacina,* Griff. Notul. III. 323. Ic. Pl. As. t. 311 fil. 3. *Bletia angustifolia,* Gaud. Freyc. Voy. Bot. 421. t. 32. Open country and wet rocks, whole peninsula, common.

Singapore (Wallich 3743), Common (Ridley, etc.); Johor near the town; Sungei Ujong: Seremban (Ridley); Selangor: Sungei Buluh (Ridley 10513); Malacca (Griffith), Sungei Hudang (Derry 98); Perak: Larut Hills (Ridley 3268); Kemaman (Johnston).

var. *alba,* flowers and bracts white, Dindings, Pulau Sembilan. Distrib. Malay Islands to Philippines and New Guinea, and Samoa.

Usually called Lumbah by the natives from its resemblance to *Curculigo.*

2. S. AUREA, Lindl. Paxt. Fl. Gard. I. 16. Journ. Hort. Soc. V. 34. Pseudobulbs globose half an inch through. Leaves lanceolate with a long point plicate 2 feet long 1½ to 3 inches wide. Scape 3-4 feet long. Flowers several, large yellow 3 inches across or less pedicels with ovary 1½ inch long. Bracts ovate obtuse green half inch long. Sepals oblong lanceolate obtuse 1¼ inch long ¾ inch across. Petals ovate lanceolate blunt. Lip shorter, side lobes long obtuse falcate, yellow base pink, midlobe narrow dilated at the apex blunt, yellow with red spots at the base. Calli 2 small horn-shaped ones, and two oblong cuneate fleshy ones, at the base of the midlobe. Column slender arched, dilate above, wings narrow orange. Hook. fil. Fl. Brit. Ind. V. 813. *S. plicata,* Griff. Notul. III. 325. Ic. Pl. As. t. 311. fig. 1. *S. Wrayi,* Hook. fil. l.c.c.

Malacca: Mount Ophir (Griffith, Derry 629), (Ridley 3138); Selangor: Bukit Hitam (Kelsall); Perak: Gunong Batu Putih (Wray 202), Larut Hills (Ridley), Gunong Inas (Wray 4107); Kedah: Gunong Jerai (Ridley 5135). Grassy spots at an altitude of 3-4000 feet. Distrib. Borneo.

3. S. HANDINGIANA, Par. and Rchb. fil. Otia. Hamburg I. 45. Pseudobulbs small globose. Leaves 2-3 lanceolate acuminate unequal, 4½-5 inches long ¾-1 inch wide or smaller. Scape graceful 8 inches long purple. Flowers few scattered on slender pedicels 1½ inch long, purple or pale rose an inch across. Bracts lanceolate acuminate ¼ inch long red. Upper sepal lorate lanceolate, laterals larger. Petals narrow lanceolate acute oblique, all crimson or pale rose. Lip side lobes short triangular erect blunt, midlobe linear acuminate. Calli 2 club-shaped truncate yellow. Column arched dilate upwards. Capsule cylindric. Hook. fil. Fl. Brit. Ind. V. 815.

Lankawi Islands (Curtis 2105). Distrib. Burmah, Siam.

22. PHAIUS, Lour.

Large terrestrial herbs. Leaves thin plaited. Scape lateral or raceme axillary. Flowers large showy racemose. Sepals and petals lanceolate equal free. Lip adnate to the base of the column embracing it, base gibbous or spurred. Column long stout foot 0. Anther 4 celled. Pollinia 8 attached by fours to a viscus.

Species 14. Tropics of the old world.

Scape from the base of the pseudobulb, tall.
- Flowers large sepals and petals acute .. 1. *P. Wallichii.*
- Flowers large sepals and petals obtuse .. 2. *P. callosus.*

Racemes from the side of a leafy stem .. .. 3. *P. pallidus.*

1. P. Wallichii, Lindl. Wall. Pl. As. Rar. II. 46. t. 158. Gen. and Sp. Orch. Pl. 126. Pseudobulbs conical 1-1½ inch through. Leaves 1-2 feet long 2½-8 inches wide, elliptic lanceolate acuminate, petiole 8-10 inches long. Scape 2-4 feet stout. Flowers four of five inches across, often self-fertilized. Sepals and petals lanceolate acute white outside, brown, or orange within. Lip tubular, midlobe ovate lanceolate acute or acuminate crisped, spur ¼ inch long. Column long straight. Capsule 2 inches long pendulous. Paxt. Mag. VI. t. 193. Hook. fil. Fl. Brit. Ind. V. 816. *P. Blumei*, Lindl. Gen. and Sp. Orch. Pl. 127 Bl. Orch. Arch. Ind. 2. t. 1. De Vriese Illust. t. 8. *P. bicolor*, Lindl. l.c. 128. Sert. Orch. t. 25. Bot. Mag. t. 4078. Wight Ic. t. 1659-60. *Limodorum Tankervilliae*, Roxb. Fl. Ind. III. 466.

Malacca: Ayer Keroh (Ridley), Bukit Sandanen (Derry); Selangor: Kwala Lumpur, Bukit Bintang (Ridley 10514). Distrib. India, Malay islands. The common form of this here is self-fertilized and does not open its flowers.

2. Ph. callosus, Lindl. Gen. and Sp. Orch. p. 128. Gard. Chron. 1848. p. 287. Pseudobulbs short stout. Leaves elongate lanceolate acuminate 2 to 4 feet long 5 inches wide. Scape from the base of the pseudobulb, about 3 feet tall. Flowers 4 inches across. Sepals oblong or linear oblong half inch across blunt, pinkish or pure white behind, brown in front. Petals narrower. Lip tubular yellow midlobe rounded bilobed with two low processes at the base, pink, spur yellow short curved. Blume Mus. Bot. II. 178. Orch. Arch. Ind. 4. t. 2. Rchb. fil. Xen. Orch. II. t. 122. Hook. fil. l.c. 817. *Limodorum callosum*, Bl. Bijdr. 374. t. 6.

Perak: Larut Hills at 4000 feet on rocks, abundant (King's Coll. 6413), (Ridley 5191). Distrib. Java. Occurs in dense forests. A very handsome plant.

3. P. pallidus, Ridl. Journ. Lin. Soc. XXXII. 313. Stems 2-3 feet tall 4 angled stout base covered with sheaths, upper part leafy. Leaves ovate acuminate 9 inches long 3 inches wide. Racemes 3 or 4 from the stem below the leaves, 7-8 flowered 2-4 inches long. Bracts lanceolate acuminate ½ inch long. Flowers 2 inches across, pedicels one inch long. Sepals lanceolate acute yellowish. Petals wider white with violet spots. Lip oblong lanceolate subacute orange yellow with red spots in lines, spur ½ inch long cylindric acuminate pink. Column long. Anther beaked.

Selangor: Bukit Hitam (Kelsall, Ridley 7785); Pahang: Tahan Woods (Ridley); Perak: Larut Hills (Curtis 2046). Occurs in forests about 3000 feet elevation.

23. Calanthe, R. Br.

Terrestrial herbs, sometimes pseudobulbs. Stems short. Leaves plaited. Scape terminal or from the side of the pseudobulb. Flowers

small or medium-sized, white, pink, or yellow. Sepals subequal. Petals similar. Lip adnate to the top of the column, 3 lobed, midlobe often face deeply bifid, disc lamellate or pectinate. Column usually short. Anther conic, pollinia 8 waxy cohering in pairs by a viscus. Capsules elliptic drooping.

Species about 40, tropical or subtropical regions.

§ 1. Eucalanthe. Scape appearing with the leaves. Bracts persistent.

Lobes of lip linear .. .. 1. *C. veratrifolia.*
Lobes of lip broad oblong, spathulate .. 2. *C. Ceciliae.*

Bracts caducous.

Leaves narrow, lip 4 lobed .. .. .. 3. *C. angustifolia.*

Leaves broad, lip 3 lobed.

Midlobe obovate retuse .. .. .. 4. *C. albolutea.*
Midlobe ovate small .. .. .. 5. *C. Scortechinii.*
Midlobe oblong acute .. .. .. 6. *C. curculigoides.*
Midlobe linear oblong obtuse .. .. 7. *C. aurantiaca.*

§ 2. Preptanthe. Scapes appearing after the leaves.

Midlobe of lip flabellate obcordate .. 8. *C. vestita.*
Midlobe of lip linear oblong bilobed .. 9. *C. rubens.*

§ 1. Eucalanthe.

1. C. veratrifolia, R. Br. Bot. Reg. sub. t. 573. Stems short one inch long. Leaves lanceolate or ovate lanceolate acuminate 12-18 inches long 3-6 inches wide, petiole 3-6 inch long. Scape 1-2 feet long pubescent, raceme compact or lax many flowered. Bracts lanceolate ¾ inch long. Flowers white ¾ inch across, ovary and pedicel 2 inches long. Sepals ovate acute or elliptic obovate. Petals oblong or lanceolate . Lip adnate to the column 1 inch long side lobes linear oblong obtuse, midlobe longer deeply divided into two linear oblong spathulate lobes, callus on the disc of connate tubercles in three rows yellow orange or red, spur slender clubbed ¾ inch long.

Lindl. Bot Reg. t. 720. Gen. and Sp. Orch. 249. Fol. Orch. 8. Bot. Mag. t. 2615. Griff Ic. Pl. As. t. 283. fig. 4. Hook. fil. Fl. Brit. Ind. V. 851. *C. comosa,* Rchb. fil. Linnea XIX. 374. *C. Perrottetii.* A Rich. Ann. Sc. Nat. Ser. ii. XV. 68. Wt. Ic. t. 1664. *Limodorum veratrifolium,* Willd. Sp. Pl. IV. 122. *Amblyglottis veratrifolia,* Bl. Bijdr. 270.

Johor: Sedili River (Ridley); Perak: Larut Hills (Hervey, Curtis), Gopeng (King's Coll. 6014). Distrib. India, Malaya, Australia

Rather variable. Plants collected by Curtis on the Perak Hills had a pale yellow lip, and are probably the var *Regnieri* Rchb. fil. Gard. Chron. II. 1887. p. 70. The Goping plant is a small compact form described as *C. diploxiphion,* Hook. fil. Fl. Brit. Ind. VI. 849. Ic. Pl. 2111.

2. C. Ceciliae, Rchb. fil. Gard. Chron. 1883. I. p. 432. Stem short, leaves elliptic lanceolate obtuse, ovate, blade 12 inches long by 4 inches wide, petiole 3 to 6 inches long. Scape stout 12-18 inches long, pubescent, raceme short crowded flowers 1 inch across, white tinted violet or all violet. Bracts persistent broadly ovate ¼ inch long. Ovary and pedicel 1 inch long. Sepals broadly elliptic ovate. Petals obovate. Lip side lobes oblong obtuse, midlobe deeply bifid lobes spathulate rounded, callus horse-shoe shaped yellow, 3 short papillose ridges on the disc spur long slender curved upwards 2 inches long. *C. Wrayi,* Hook. fil. Fl. Brit. Ind. V. 850.

Selangor: Kwala Lumpur Caves (Ridley 8486), Bukit Hitam (Kelsall); Pahang: Kota Glanggi (Ridley var with violet flowers); Sungei Ujong: Gunong Tahan (Native Collector); Perak: Hermitage Hill (Ridley); Sungei Siput: Kinta (Curtis). Native name "Suboi." Occurs on rocks and the ground in dense forests.

3. C. angustifolia, Lindl. Gen. and Sp. Orch. Pl. 251. Fol. Orch. 5. Rhizome creeping long slender. Leaves narrow lanceolate acuminate, 18 inches long by 1 inch wide, petiole a foot long. Scapes 4 inches to a foot long, slender with a large sheathing bract towards the base, raceme two or three inches long, flowers crowded, or lax pure white. Bracts caducous lanceolate acuminate 1½ inch long, narrow. Pedicel and ovary ½ inch long. Sepals oblong acute. Petals very broad. Lip 4 lobed subequally, midlobe retuse with two triangular lamellae at base, spur clubbed curved ¼ inch long. Capsule ¾ inch long. Hook. fil. Fl. Brit. Ind. V. 854. *C. phajoides,* Rchb. fil. Bon. pland. V. 1857, 37. Xenia Orch. I. 207. t. 79. Hook. fil. Ic. Pl. 1864. *Amblyglottis angustifolia,* Bl. Bijdr. 369.

Perak (Scortechini), Larut Hills (King's Collector 5054), (Curtis 2066), Bujong Malacca (Ridley 9826); Pahang: Kluang Terbang (Barnes). Distrib. Java. Terrestrial; at an altitude of from 3-5000 feet.

4. C. albolutea, Ridl. Journ. Roy. As. Soc. S. Br. Vol. XXXIX. p. 80. A large plant with broadly lanceolate acute leaves, 2½ feet long, and 4 inches wide with strong ribs, petiole stout 8 inches long. Scape stout over 1½ feet tall. Bracts caducous. Flowers about ½ an inch across, pedicel and ovary ¼ inch long. Sepals and petals short broad ovate acute white. Lip 3 lobed white with yellow base, side lobes very short falcate acute midlobe broad reniform obovate bilobed

rounded: calli 2 erect semiovate ridges, spur shorter than the pedicel thick blunt curved clubbed.

Perak (Scortechini), Larut Hills (Derry), Bujong Malacca (Ridley).

5. C. Scortechinii, Hook. fil. Fl. Brit. Ind. V. 854. Leaves lanceolate acuminate, 2 feet long 3 inches wide. Scape stout 1½ foot long with several large loose sheaths, raceme dense 2 inches long. Bracts lanceolate acute 2 inches long pale green caducous. Flowers small, ovary and pedicel ¼ inch long. Sepals lanceolate acute ¼ inch long connivent. Petals broader oblong. Lip small side lobes very short blunt, midlobe longer ovate edges incurved with two low keels on the base, spur much shorter than the ovary, clubbed, all yellow. Column white, anther beaked. Capsule ½ inch long elliptic.

Perak: Larut Hills (Scortechini, Curtis). The lip is often retuse with a small decurved process in the notch. Forests at 2-4000 feet elevation.

6. C. curculigoides, Lindl. Gen. and Sp. Orch. Pl. 251. Leaves lanceolate acuminate, 2-3 feet long, 6 inches wide, petiole 1½ inches long. Scape 1-2 feet tall stout, raceme dense many flowered. Bracts lanceolate acute pale green 1½ inch long, falling off as the flowers expand. Flowers orange, lip red, pedicel and ovary ¾ inch long. Sepals and petals sub-similar ovate lanceolate acute nearly ½ inch long. Lip as long as sepals adnate to column base, side lobes waved erect obtuse midlobe longer entire oblong acute, spur as long as the ovary and pedicel, slender with a hooked tip. Column semiterete, upper edge sinuate dentate. Anther white with a long beak. Lindl. Bot. Reg. 1847. t. 8. Fol. Orch. 4. Hook. fil. Fl. Brit. Ind. V. 854. *Stylo-glossum nervosum,* Breda Orch. Jav. t. 10.

Singapore (Wallich 7340), Bukit Timah, Selitar (Ridley); Johor: Kwala Tebing Tinggi, Gunong Pulai (Ridley); Perak. Distrib. Sumatra, Java. Damp forest from sea level to about 2000 feet elevation.

Formerly abundant in Singapore, but has become scarce through the destruction of the forests. It is beautiful plant, flowers in September.

7. C. aurantiaca, Ridl. Journ. Roy. As. Soc. S. Br. Vol. XXXIX. p. 80. Leaves narrow lanceolate acuminate 12 inches long ¾ inch wide petiole 3 inches. Scape a foot tall slender, with a large lanceolate sheath towards the base. Bracts caducous. Flowers ⅓ inch across, orange coloured. Pedicel and ovary slender ½ inch long. Sepals ovate much broader, orange. Lip narrow side lobes subtriangular, ovate midlobe narrow linear oblong obtuse, red keels

2 short semiovate. Spur narrow slender sigmoid blunt. Rostellum long beaked.

Perak: Bujong Malacca (Ridley).

§ 2. Preptanthe.

8. C. vestita, Lindl. Gen. and Sp. Orch. Pl. 250. Pseudobulbs 2-5 inches long ovoid obtusely angled, leafy after flowering. Leaves 12 to 18 inches long lanceolate, wide. Scape from the side of the pseudobulb 12 to 18 inches or more, villous. Bracts persistent ovate ¾-1 inch long. Flowers white large, pedicel and ovary 1½ inch long. Sepals ovate lanceolate. Petals broadly oblong. Lip side lobes cuneate obovate, midlobe flabellate obcordate, white with a red or yellow spot at the base. Spur very long. Bot. Mag. t. 4671. Flor. des Serres t. 816. Hook. fil. Fl. Brit. Ind. V. 852. *Cytheris Griffithii,* Wt. Ic. t. 1751-2. *Preptanthe vestita,* Rchb. fil. Bot. Zeit. XVI. 128.

Selangor: Epiphytic on the top of the limestone rocks, near Kwala Lumpur (Ridley, one plant). Distrib. Tenasserim, Borneo.

9. C. rubens, Ridl. Gard. Chron. 1890. I. p. 576. Pseudobulbs conic deeply grooved 6 inches long. Leaves 12-20 inches long 5 to 6 inches wide ovate lanceolate. Scape nearly 2 feet long woolly pubescent except on the sheaths. Flowers rose or white. Bracts ovate acuminate pubescent, an inch long. Pedicel and ovary 2 inches long pubescent. Sepals lanceolate acuminate ¾ inch long. Petals shorter. Lip side lobes oblong erect appressed to column obtuse, midlobe linear oblong apex bilobed, lobes excurved obtuse, with a process in the sinus, base of lip darker coloured with three raised lines. Spur filiform curved ½ inch long.

Lankawi Islands (Curtis 2181). Terrestrial. A much smaller plant than *C. vestita.* Endemic.

24. Arundina, Blume.

Terrestrial herbs, with woody terete stems, and narrow grassy leaves. Flowers in a raceme simple or sparingly branched, large. Bracts persistent ovate. Sepals lanceolate. Petals broader. Lip 3 lobed, lobes convolute round the column midlobe rounded crisped, 2 or more raised nerves on the disc. Column long dilate upwards, winged. Anther helmet-shaped. Pollinia 8 in superposed pairs cohering by a viscus. Capsule oblong.

Species 6. Indian, Malayan and Chinese.

Flowers 3 inches across	1. *A. speciosa.*
Flowers 2 inches across.	
Side lobes of lip distinct	2. *A. Philippii.*
Side lobes obscure	3. *A. revoluta.*

1. A. SPECIOSA, Blume Bijdr. p. 401. t. 73. Stems 3 to 7 feet tall slender. Leaves narrow linear acuminate 2-4 inches long, ⅛ inch wide. Raceme 6-8 inches long, few flowered. Bracts ovate acute ¼ inch long. Ovary and pedicel 1 inch long. Sepals lanceolate 1½ inch long ½ inch wide, keeled, rose pink. Petals ovate, mucronate as long and twice as broad, pink. Lip longer 2 inches oblong side lobes short, midlobe bilobed crisped, rose colour with deep crimson apex and edges, a yellow central line, keels 3 on the disc. Column white an inch long. Capsule oblong 3 inches long. *A. bambusifolia,* Lindl. Bot. Reg. XXVII. Misc. 2. Journ. Linn. Soc. iii. 22. Gen. and Sp. Orch. Pl. 125. Wight Ic. t. 1661. Griff. Notul. III. 329. 331. Ic. Pl. As. t. 514. Hook. fil. Fl. Brit. Ind. V. 857. *A. densa,* Lindl. Bot. Reg. XXVIII. t. 38. Misc. 26. Journ. Linn. Soc. III. 23. *A. densiflora,* Hook. fil. l.c.c. *Cymbidium bambusifolium,* Roxb. Fl. Ind. III. 460. *Bletia graminifolia,* Don. Prodr. 29.

Johor: Gunong Janeng (Kelsall), Indau River (Ridley); Pahang: Tahan River (Ridley 2052); Malacca: Mount Ophir (Derry 642); Perak: Kinta. On rocks in streams. Distrib. India, Borneo, Java.

The locality Singapore given in Flora of British India must be an error. There is no place in Singapore likely to have produced it.

2. A. PHILIPPII, Rchb. fil. Linnaea XXV. 227. var. *Malayana.* Stems about three feet tall. Leaves linear acuminate 4 inches long ⅛ inch broad. Raceme 2 inches long. Bracts ovate ⅛ inch long. Flowers 2 inches across, ovary and pedicel one inch long. Sepals lanceolate acute. Petals similar wider, white tinted rose. Lip shorter, side lobes oblong rounded, midlobe orbicular obovate bilobed lobes rounded, pinkish white, with brown streaks on the side lobes, apex of midlobe dark crimson, keels two crested on the disc thickened and connate on the midlobe yellow pubescent with a smaller median one in the centre. Column apex curved thickened, back white, front brown and red wings narrow.

Kedah Peak: Gunong Jerai (Ridley 5128) on rocks. Differs from *A. Philippii* typical in its large brown-streaked flowers. Distrib. of type, Java, Hongkong.

3. A. REVOLUTA, Hook. fil. Fl. Brit. Ind. V. 858. Stems about 3 feet tall slender. Leaves linear long acuminate rather stiff 4-7 inches long ⅛-¼ inch wide, rather crowded. Raceme 1-2 inches long. Bracts ovate acute inch long. Ovary and pedicel 1 inch long. Sepals lanceolate acute 1⅛ inch long ⅛ inch broad pale violet rose. Petals oblong acute as long and nearly twice as broad. Lip a little longer, side lobes not distinct midlobe bilobed with a median tooth, keels 2 low and straight, median one very low and obscure whole lip

pale rose edge veined with purple, a pale yellow central blotch. Column pinkish white. Capsule 1⅛ inch long.

Perak: Larut Hills, at Thaiping Waterfall (Scortechini 1504), (Ridley 2882).

25. Dilochia, Lindl.

Epiphytic or terrestrial plants with stout leafy terete stems. Leaves coriaceous, broadly lanceolate. Inflorescence racemose or panicled, terminal. Bracts large coriaceous. Flowers mediocre. Sepals lanceolate. Petals similar. Lip three lobed with 5 crests in the centre. Column tall arched with three anthers. Rostellum broad entire. Fruit globose.

Species 2. Malay Peninsula and Islands.

Bracts lanceolate acute	1. *D. Wallichii.*
Bracts ovate blunt	2. *D. Cantleyi.*

1. D. Wallichii, Lindl. Gen. and Sp. Orch. Pl. 38. Stems 18 by 24 inches long. Leaves ovate lanceolate acuminate 3-7 inches long 1½-2 inches long, sheaths ribbed 1 inch long. Panicle of one or more branches 6 to 9 inches long. Bracts lanceolate acute one inch long. Pedicel and ovary ¾ inch long. Sepals and petals oblong lanceolate ochre yellow, half inch long. Lip yellow with red markings sides revolute rounded, midlobe broad rounded. Column large with the three anthers well marked. Capsule globose, opening by slits half way down. Blume Orch. Arch. Ind. t. 8. and 5. A. *Arundina Wallichii,* Rch. fil. Xen. Orch. II. 13. t. 105. fil. 13-15. Hook. fil. Fl. Brit. Ind. V. 858.

Singapore (Wallich 1952); Perak: Larut Hills (Derry Herb. Singapore 10818).

2. D. Cantleyi, Ridl. Journ. Linn. Soc. XXXII. p. 332. Stems as in *D. Wallichii.* Leaves ovate or ovate lanceolate long acuminate, 4 inches long by 1 wide, sheaths ½ inch long. Panicle 3 or 4 inches long with many branches. Bracts ovate boat-shaped -½ inch long. Flowers 1¼-1⅓ inch wide. Sepals oblong lanceolate, falcate. Petals linear oblong, all yellow with red nerves. Lip small three lobed side lobes oblong blunt, midlobe flabelliform, keels 5 crenate, traversing the whole lip. Column toothed. *Arudina Cantleyi,* Hook. fil. Fl. Brit. Ind. l.c.c. Ic. Pl. 2112.

Perak: Gunong Bubu (Cantley), Gunong Inas (Wray 4098).

26. Coelogyne, Lindl.

Epiphytic or rock plants, with a stout rhizome, and two leaved psudobulbs. Leaves coriaceous. Scape lateral from the rhizome or terminal on the top of the pseudobulb. Bracts deciduous papery.

Flowers white, pale yellow or green often large. Sepals oblong or lanceolate. Petals narrower. Lip sessile at the base of the column, spurless side lobes embracing the column. Column long footless, top hooded, sides winged. Anther conic 2 celled. Pollinia 4 cohering in pairs by a granular viscus. Cpsule large elliptic pendulous winged.

Species about 70. Indo-Malayan.

Raceme pendulous from the rhizome.
Raceme short quite glabrous .. .. .. 1. *C. testacea.*
Raceme very long many flowered.
Pseudobulbs conic-cylindric. Leaves lanceolate.
Flowers distant nigrohirsute .. .. 2. *C. Dayana.*
Flowers crowded glabrous .. .. 3. *C. densiflora.*
Pseudobulbs cylindric leaves obovate .. 4. *C. Rochusseni.*
Pseudobulbs 4 angled, leaves oblanceolate 5. *C. quadrangularis.*
Racemes erect from side of pseudobulbs.
Flowers numerous white large.
Bracts large ovate .. .. .. 6. *C. asperata.*
Bracts lanceolate .. .. ..
Petals narrower than sepals.. ..
Sepals acuminate. Flowers large .. 7. *C. longibractata.*
Sepals acute. Flowers smaller .. 8. *C. angustifolia.*
Petals wider than sepals.
Lobes of lip acute .. .. .. 9. *C. Foerstermanni.*
Lobes of lip blunt .. .. .. 10. *C. Kingii.*
Flowers green and black.
Pseudobulbs thin and flat .. .. .. 11. *C. pandurata.*
Pseudobulbs conic, or ovate .. .. 12. *C. Mayeriana.*
Flowers one or two on the scape.
Flowers white. Petals lanceolate .. .. 13. *C. Cumingi.*
Flowers brown. Petals linear .. .. 14. *C. speciosa.*
Flowers small lip clawed.
Side lobes acute .. .. 15. *C. sulphurea.*
Side lobes truncate .. .. .. 16. *C. pusilla.*
Scape from the top of a pseudobulb.
Flowers large two inches across.
Lip side lobes blunt, midlobe shorter .. 17. *C. anceps.*
Side lobes acute, midlobe as long .. 18. *C. pallens.*

Flowers small ½ inch across.

Pseudobulbs distant fusiform.

Leaves ovate. Flowers green	.. 19. *C. prasina.*
Leaves elliptic. Flowers brown	.. 20. *C. carnea.*
Pseudobulbs crowded very small	.. 21. *C. stenochila.*

.. 1. C. TESTACEA, Lindl. Bot. Reg. 1842. Misc. p. 38. Folia Orchidacea 2. Pseudobulbs crowded often forming large masses, conic 2 inches long, ¾ inch thick rugose. Leaves lanceolate petiolate acute 7 to 8 inches long, 2 inches wide, petiole 2 inches long. Racemes short pendulous 6 flowered. Flowers an inch long foetid. Bracts persistent oblong flesh coloured ½ an inch long. Sepals oblong subacute keeled. Petals linear narrow, all flesh colour. Lip ¾ inch long, side lobes rounded dark brown edged with white midlobe ovate or oblong orbicular rounded crisped, with 4 crested ridges running the whole length, white with brown marbling at the tip. Column white hood obscurely toothed. Anther conic brown. Botanical Magazine t. 4785. Hook. fil. Fl. Brit. Ind. V. 829.

Singapore: Chan Chu Kang, Kranji, etc., (Ridley); Johor: Tana Runto (Ridley). On the bases of *Oncosperma,* and other trees near the sea. Endemic.

2. C. DAYANA, Rchb. fil. Gard. Chron. 1886. p. 44. fig. 9. Pseudobulbs crowded subcylindric narrowed upwards 4 inches long. Leaves lanceolate acuminate 20 inches long 3 inches wide narrowed into a petiole 4 inches long. Scape pendulous 20 inches long. Flowers distant numerous 20 to 30. Bracts oblong obtuse 1 inch long. Pedicel and ovary 2 inches long, like the rachis covered with a black pubescence. Sepals lanceolate acute keeled 1¼ inch long. Petals lanceolate narrowed. Lip longer, side lobes obtuse brown with white veins inside, white with a brown patch outside, midlobe oblong ovoid edges crisped, keels on disc 3 crested, base brown, middle white, apex yellow, with two more outside on the midlobe. Column curved 1 inch long white, brown in front. Hood obscurely toothed. Anther conic. Williams Orchid Album VI. t. 247. *C. tomentosa,* Wawra. Bot. Voy. Ps. Saxe-Coburg II. 154. t. 10. Hook. fil. Fl. Brit. Ind. V. 830. (not of Lindley).

Malacca: Mount Ophir (Hullett 861); Pahang: Kluang Terbang (Barnes Herb Singap. 10914); Perak: Larut Hills (Derry, Curtis, King's Collector); Penang (Curtis). Distrib. Borneo.

var. *Massangeana.* Pseudobulbs and leaves shorter, keels on midlobe forming an irregular yellow mass. *C. Massangeana,* Rchb. fil. Gard. Chron. 1878. 684.

Perak: Larut Hills (Derry).

C. tomentosa, Lindl. Folia Orchid 3, is described as having a tomentose ovary and three keels on the lip. It was collected by Lobb, No. 187 of his collection and has no locality on the specimen. *C. Dayana* is not tomentose at all, but the rachis and ovary are covered with a nigrohirsute pubescence, and has five keels on the lip. *C. Massangeana,* Rchb. fil. has been a very puzzling plant on account of the fact that it has been confused with typical *Dayana.* Hooker (Bot. Mag. t. 6799) states that it is not nigrohirsute; Williams' Orchid album gives it as nigrohirsute (Orchid Album t. 29). The original plant had short bulbs and broad leaves, but plants from the Larut Hills with the flowers of *C. Massangeana,* have the pseudobulbs and leaves of *C. Dayana.* The coalescence of the ridges on the disc seem to be the only distinguishing point.

3. C. DENSIFLORA, Ridl. Journ. Roy. As. Soc. S. Br. Vol. XXXIX. p. 81. Pesudobulbs long cylindric conic narrow 4 inches long. Leaves lanceolate acuminate 15 inches long, 1¾ inch wide, petiole 2 inches long. Scape pendulous 8 inches long dense, flowers numerous smaller than in *C. Dayana,* rachis and ovaries not nigrohirsute. Bracts red brown oblong truncate half an inch long and as wide. Sepals lanceolate acute. Petals narrower ½ inch long brownish. Lip side lobes short acute apices narrow, outside white, inside brown with white streaks, midlobe orbicular shortly apiculate edge white, centre red brown with a large yellow central papillose mass, keels on the disc between the lobes crested. Column hood retuse. Anther white.

Selangor: Bukit Hitam (Kelsall). Endemic.

4. C. ROCHUSSENI, De Vr. Ill. Orch. t. 12. t. 11. fil. 6. Rhizome stout. Pseudobulbs few close cylindric grooved 3-6 inches long. Leaves obovate petiole 7-8 inches long, 4 inches wide, petiole 1½-2 inches long. Scapes pendulous 18-24 inches long slender. Flowers distant, numerous. Bracts oblong truncate ½ inch long. Pedicel and ovary slender ¾ inch. Sepals lanceolate acute ¾ inch long greenish yellow, keeled. Petals linear narrower. Lip as long side lobes long blunt, white outside tawny with white veins inside disc white, midlobe ovate acuminate narrowed at the base, edge crisped white with a yellow centre and 2 tawny spots towards apex, keels 3 crested, on the disc with two extra outside on the midlobe, tips yellow, bases brown column hood three lobed, side lobes short median broad truncate cuneata. Capsule ovoid with three strong keels 2 inches long and one across; Rchb. fil. Xenia Orch. 1. p. 212. t. 85. *C. macrobulbon,* Hook. fil. Fl. Brit. Ind. V. p. 830.

Singapore: Seletar (Ridley); Johor: Batu Pahat, Gunong Janeng (Kelsall), Pulau Dayak, Pulau Aor (Feilding); Pahang: Tahan River (Ridley); Selangor: Bukit Hitam (Kelsall), Rawang

(Ridley 7781), Sungei Ujong (Native Collector); Perak: Larut Hills (King's Coll. 6794); Penang (Wallich 19691?); Malacca: Mount Ophir (Ridley). Distrib. Sumatra, Java, Borneo. Native name "Sakat Tulo Ular." (Snake's bones orchid).

5. C. QUADRANGULARIS, Ridl. Journ. Linn. Soc. XXXII. p. 323. Rhizome thick, pseudobulbs conic strongly 4-angled 3 inches long, 1½ inch thick. Leaves 6 inches long 2 inches wide oblanceolate acute narrowed at the base into a short half inch petiole racemes pendulous 8 inches long 8-12 flowered. Flowers distant, rachis nigrohirsute. Bracts oblong ¼ inch long. Sepals lanceolate acute 1¼ inch long, laterals longer falcate keeled. Petals lanceolate linear narrower. Lip an inch long, side lobes oblong obtuse white outside, inside brown with white veins, midlobe ovate obtuse white with a brown central spot, keels 3, denticulate with 2 extra ones on the midlobe. Column white with brown markings, hood truncate irregularly toothed. Anther brown.

Perak: Larut Hills 5000 feet (Ridley). Distrib. Borneo.

6. C. ASPERATA, Lindl. Journ. Hort. Soc. IV. 221. Pseudobulbs crowded conic, smooth 5-7 inches long 1-2 inches thick. Leaves oblanceolate obovate cuspidate narrowed at the base dilate upwards, 2 feet long 4 inches across strongly ribbed, petiole 8 inches long. Scape from the rhizome near the bulb drooping, base 4 inches covered with large ovate bracts erect, raceme 6 inches long. Flowers about 15-20 fragrant. Bracts oblong ¾ inch long. Ovary and pedicel 1 inch. Sepals oblong lanceolate white or yellowish. Petals linear lanceolate. Lip side lobes long ovate, midlobe claw broad limb oblong obtuse crisped with an orange warty ridge. Column stout. Capsule elliptic 2 inches long, wings not very large. Williams' Orchid Album t. 311. Hook. fil. Fl. Brit. Ind. V. 835. *C. Lowii*, Lindl. Paxt. Mag. 1849. 225.

Perak: Larut Hills on rocks and trees, (King's Coll. 7287). Distrib. Sumatra, Borneo.

7. C. LONGIBRACTATA, Hook. fil. Fl. Brit. Ind. VI. p. 194. Ann. Bot. Roy. Gard. Calc. Vol. 8. p. 26. t. 39. Pseudobulbs elongate conic ribbed 3 inches long. Leaves narrow lanceolate acute 8 inches long 1¼ wide. Scape from the rhizome near the bulb, erect at base covered with green sheathing leaves about 3 inches long, two uppermost foliaceous raceme 6 inches long flexuous, 5 flowered. Bracts lanceolate acuminate papery 2 inches long. Flowers 3 inches across, pedicel 1 inch long. Sepals lanceolate acuminate acute. Petals narrower, all white. Lip shorter, side lobes ovate obtuse, yellow veined orange, midlobe short ovate cuspidate edge at base crisped, white with a basal yellow spot, keels three, crisped with 2 outside on the disc. Column dark orange, hood truncate 2 toothed.

Anther belt shaped apex thickened. *C. casta,* Ridl. Journ. Linn. Soc. XXXII. 322.

Selangor: Bukit Hitam (Kelsall); Perak: (Kunstler), Larut Hills (Derry).

8. C. ANGUSTIFOLIA, Ridl. Journ Linn. Soc. XXXII. 322. Rhizome very stout, pseudobulbs 2½ inches long conic smooth. Leaves lanceolate acute, narrow 3 nerved 10 inches long, 1 inch across, petiole 3 inches long. Scape from rhizome close to pseudobulb, 6 inches long, base 1 inch covered with loose sheaths, raceme slender flowers about 6, small. Bracts lanceolate acute. Sepals lanceolate lorate subacute 1 inch long, cream colour. Petals much narrower spathulate linear. Lip ¾ inch long, side lobes long obtuse pale outside brown within, midlobe obovate oblong rounded edge undulate, keels 3, inner one smaller, sinuate white, edge yellow with brown spots. Column arched cream colour tinted brown, hood rounded. Anther conic.

Lankawi Islands (Curtis).

9. C. FOERSTERMANNI, Rchb. fil. Gard. Chron. 1886 II. p. 262. A large plant with elongate conic pseudobulbs grooved 5 inches long, 1 through. Leaves lanceolate acute, 8-15 inches long 2-2½ wide petiole 3 to 4 inches long. Scape from rhizome near the pseudobulb, 2 feet long, base erect covered with sheaths, raceme nodding of seven or more large flowers. Bracts lanceate acute 3 inches long. Pedicel and ovary 1½ inch long. Sepals lanceolate 1½ inch long. Petals wider, all pure white. Lip side lobes broad, apices acute white with orange brown streaks, midlobe ovate acute edges crisped keels 5 crested, white centre yellow with a few red spots. Column green with yellow edges, hood emarginate denticulate. Anther conic with a boss on the top. *C. Maingayi,* Hook. fil. Fl. Brit. Ind. V. p. 831.

Malacca (Maingay, Derry); Pahang: Kuantan (Durnford), Telang River (Machado). Distrib. Borneo. On very lofty trees, a beautiful plant but very difficult to cultivate.

10. C. KINGII, Hook. fil. Ann. Bot. Roy. Gard. Calc. V. 5. p. 25. t. 38. Rhizome stout, pseudobulbs close or distant, elongate conic 4 inches long 1 inch through. Leaves lanceolate acute 9. inches long 1½ inch wide petiole ½-1 inch long. Scape from rhizome at base of pseudobulb, base sheathed 6 inches long raceme flexuous, 1 foot long. Flowers 8 distant white. Bracts 1¼ inch long. Sepals lanceolate acute an inch long. Petals spathulate lanceolate nearly as long and broader. Lip ¾ inch long, side lobes rounded obtuse, midlobe broader rounded crisped mucronate, white with a yellow spot on both sides of the side lobes and on base of midlobe brown streaks at base or lip, keels 3, median shorter all undulate, denticulate, 2 extra ones on midlobe outside. Column yellowish, white,

hood notched and rounded. Anther buff, helmet shaped, with a boss on top.

Perak: Larút Hills (Kunstler, Derry).

11. C. PANDURATA, Lindl. Gard. Chron. 1853. p. 791. Rhizome rather long creeping, pseudobulbs orbicular ovoid 3-5 inches long 1½ inch wide flat and thin. Leaves elliptic lanceolate acuminate, narrowed at the base into a long 2-4 inch petiole 12-18 inches long, 2-3 inches wide. Scape 6-18 inches long basal half enclosed in sheaths, the upper pair foliaceous. Flowers large green and black 8 or 9, raceme lax. Bracts 1 inch long persistent. Ovary and pedicel 2 inches. Sepals linear oblong laterals smaller. Petals subspathulate. Lip pandurate, lobes narrow, midlobe subquadrate, retuse, base narrowed mottled and veined black. Bot. Mag. t. 5084. Rchb. fil. Xenia Orch. II. t. 121. Warner Orchid Album t. 63. Lindenia II. t. 86. Hook. fil. l.c. 835.

Selangor: Rawang; Pahang Track (Ridley); Perak: Kinta (King's Coll. 7176), (Scortechini). Distrib. Borneo, Sumatra. On trees over streams.

12. C. MAYERIANA, Rchb. fil. Gard. Chron. 1877. II. p. 134. Rhizome long and thick, pseudobulbs ovate compressed, 3-4 inches apart 2 inches long, 1 inch wide. Leaves lanceolate acute 8 inches long 1 inch wide, with a thick petiole. Scape a foot long distant from the pseudobulb, base 2 inches sheathed 2-3 upper sheaths foliaceous, raceme rachis stout, lax flowered. Flowers 5-6 pedicel and ovary 2 inches long. Bracts oblong 1 inch. Sepals 1½ inch long oblong obtuse green. Petals smaller, linear lanceolate acute. Lip green with black nerves and dots, side lobes long obtuse, midlobe pandurate bilobed crisped, keels 3 on disc, 4 on midlobe toothed and crested. Column green, wings wide. Anther conic obtuse. Capsule elliptic 2 inches long keels, low. Ridley Journ. Linn. Soc. XXXII. 325.

Singapore: Kranji, Chan Chu Kang (Ridley); Johore: Tana Runto (Ridley). Distrib. Rhio, Sumatra. Low down on trees in sandy places near the sea.

13. C. CUMINGII, Lindl. Bot. Reg. 1840. Misc. p. 76. Pseudobulbs globose conic corrugate crowded 1½ inch long, an inch thick on a stout rhizome. Leaves lanceolate acute, 6 inches long 1 inch wide. Scape erect from among the leaves, 3-5 inches long, few flowered. Bracts lanceolate acuminate 1 inch long. Flowers 3 inches across. Sepals oblong lanceolate subacute. Petals lanceolate much narrower, all white. Lip side lobes oblong obtuse white with orange below the tips, midlobe large broad erose or entire subacute white with an orange centre, keels 3 crisped on the disc more elevated and denticulate, teeth red brown at the tips on the midlobe. Column

curved, hood minutely toothed white. Bot. Reg. 1841. t. 29. Bot. Mag. t. 4645. Hook. fil. Fl. S. Brit. Ind. V. 834.

Singapore (Cuming), Bukit Timah (Ridley); Malacca: Mount Ophir (Ridley), Pulau Brawang (Derry); Pahang: Tahan River (Ridley); Perak: Waterloo (Curtis), Larut Hills (Ridley).

On the tops of very lofty trees in the low country but often forming large masses on rocks at an elevation of 3000 feet. Flowers in July. Flowers fragrant.

14. C. SPECIOSA, Lindl. Gen. and Sp. Orch. Pl. 39. Pseudobulbs crowded ovoid 1-1½ inch long angled. Leaf single elliptic or lanceolate acute 4 to 12 inches long, 3-inches broad, petiole 1-2 inches long. Raceme drooping from the axil of the young leaf 4 inches long 1-2 flowered. Bracts lanceolate acuminate, caducous. Sepals oblong lanceolate acute 2-2½ inches long greenish or buff. Petals narrowly linear. Lip large, side lobes obtuse toothed, midlobe broadly clawed rounded toothed oblong with two fringed crests yellow blotched and marked red brown, margin broad white. Capsule 2½ inches long ovoid with very large wings. Bot. Reg. 1847. t. 23. Fol. Orch. 11. Bot. Mag. t. 4889. Hook. fil. Lindl. Fl. Brit. Ind. V. 834. Williams' Orch. Alb. Pl. 494. *Chelonanthera speciosa,* Bl. Bijdr. 384. t. 51.

Singapore: Ulu Sumbawang (Ridley's Coll.); Johor: Sungei Tebrau; Pahang: Tras Route (Barnes), Tahan River (Ridley); Perak: Larut Hills common (Ridley 5198), Gunong Batu Putih (Wray); Selangor: Semangko Pass (Ridley); Penang: West Hill (Curtis). Distrib. Borneo, Java. On trees in dense forest from sea level to 3000 feet elevation.

15. C. SULPHUREA, Rchb. fil. Bonplandia 1857. 43. Pseudobulbs obpyriform crowded 1-1½ inch long. Leaf solitary elliptic or lanceolate, 3-6 inches long ½-1 wide, petiole 1-3 inches long. Scape from the rhizome, base covered with sheaths 2-3 inches long, raceme slender 2-3 inches long. Flowers small about 10-12 in number. Sepals oblong lanceolate acuminate nearly ½ inch long. Petals very narrow linear, all pale green or sulphur coloured. Lip clawed side lobes narrow acute, midlobe clawed oblong, blade broad reniform rounded retuse pale yellow with an orange central spot, keels 2 on the disc and claw of midlobe. Column arched, hood very broad rounded Hook. fil. Fl. Brit. Ind. V. 833. *Chelonanthera sulphurea* Bl. Bijdr. 383.

Pahang: Kluang Terbang (Barnes 11070); Perak (Scortechini), Larut Hills at 5000 feet alt. (Curtis), Ulu Batang Padang (Wray 1538).

This and the next species are almost intermediate between the general *Coelogyne* and *Pholidota,* the lip being quite peculiar in its

claw and short spreading side lobes and the pseudobulbs being one-leafed only.

16. C. PUSILLA, Ridl. Journ. Linn. Soc. XXXII. 327. Pseudobulbs crowded conic 1 inch long ¼ inch thick. Leaf solitary 3-4 inches long 1 inch wide lanceolate acute petiole 1 inch. Scape from the side of the pseudobulb 4 inches or more long. Bracts lanceolate acute an inch long. Flowers small pedicels ¾ inch long. Sepals lanceolate acute flesh colour. Petals narrow linear filiform. Lip clawed, blade deflexed, side lobes small oblong truncate midlobe oblong ochre yellow apex dilated reniform bilobed white with an orange red spot at base, keels 2 between the side lobes. Column arched broadly dilate above with large wings.

Perak: Larut Hills at 4000 feet (Ridley), (Curtis 2063). Distrib. Java.

17. C. ANCEPS, Hook. fil. l.c. 840. Ic. Pl. 2109. Rhizome stout, pseudobulbs distant ellipsoid or fusiform. Leaves 2 elliptic acute 2½-4 inches long, ⅔-1½ inch wide, petiole short stout. Scape from the top of the pseudobulb 5-10 inches long base nude compressed raceme stiff with several persistent bracts at the base. Flowers 2 inches across, ovary and pedicel ¼ inch long. Bracts ½ inch. Sepals linear oblong acute. Petals narrowly linear. Lip side lobes long apices obtuse, midlobe wider rounded much shorter with 2 short ridges in the centre. Column hood acute.

Perak (Scortechini).

18. C. PALLENS, Ridl. Journ. Roy. As. Soc. S. Br. Vol. XXXIX. p. 81. Rhizome stout, pseudobulbs subcylindric 2-3 inches long wrinkled. Leaves 2 elliptic, or oblanceolate 6-3 inches long 1-1½ inch wide, petiole 1 inch. Scape from the top of the pseudobulb, base nude with 1 persistent bract, raceme long 6 inches flexuous. Flowers 2 inches across. Sepals lanceolate acute pale green or buff. Petals linear filiform. Lip pale buff lateral lobes long, with subacute long denticulate pubescent tips base saccate, midlobe as long with 2 long sinuous brown keels with a short intermediate one. Column hood 3 lobed, central lobe long undulate or nearly entire. Anther conic not beaked.

Perak: Taiping Hills (Curtis), Bujong Malacca (Ridley). On trees alt. 2500 feet.

Closely allied to *C. anceps,* but the scape is terete, and the petals are linear filiform.

19. C. PRASINA, Ridl. Journ. Linn. Soc. XXXII. 326. Rhizome rather slender long creeping pseudobulbs distant fusiform 2 inches long. Leaves ovate or elliptic acute 5 inches long 1¼ inch wide, petiole ½-¾ inch long. Scape from the top of the pseudobulb 6 inches

long flexuous. Bracts lanceolate acuminate an inch long deciduous. Flowers about 5, green ¾ inch across, pedicels ½ inch long. Sepals lanceolate acute. Petals shorter filiform from a lanceolate base. Lip much longer pandurate side lobes short rounded, midlobe much longer oblong base narrowed, keels 2 thick. Column short, hood short rounded.

Kedah: Gunong Jerai 3-4000 feet, on trees and the ground (Ridley 5131).

20. C. CARNEA, Hook. fil. Fl. Brit. Ind. V. 838. Ic. Pl. 2107. Rhizome long stout, bulbs distant fusiform 1-2 inches long. Leaves 2 elliptic lanceolate 2-4 inches long ½-1 wide petiole ½-1 inch long. Scape from top of pseudobulbs slender 8-9 inches long, base flattened, raceme (6 inches) flexuous. Bracts lanceolate acute caducous 1 inch long. Flowers small 18-20, ½ inch long yellow and brown. Sepals oblong lanceolate acute, laterals falcate gibbous. Petals linear filiform. Lip longer, side lobes rounded obtuse, midlobe obovate rounded or retuse, much longer, keels 2 short. Column wings wide. Anther beaked.

Pahang: Kluang Terbang (Barnes 11077); Perak (Scortechini). The petals in Ic. Pl. 2107 are much too broad.

21. C. STENOCHILA, Hook. fil. l.c. 837, Ic. Pl. 2106. Rhizome rather slender, pseudobulbs terete ½-⅔ inches long, close together. Leaves sessile or elliptic oblong, 1-1½ inch long, ½-⅔ wide. Scape from the top of the bulb, base flattened short, raceme 8 inches long, narrowly linear. Lip narrow side lobes long apices short obtuse, midlobe orbicular, with 3 keels in the centre. Column hood truncate 3 lobed.

Perak: Gunong Batu Putih (Wray).

27. PHOLIDOTA, Lindl.

Epiphytes, with a stout often erect rhizome, pseudobulbs distant or crowded. Leaves 2. Scapes from the top of the pseudobulb, rachis often flexuous. Bracts distichous dry. Flowers small, little expanded pink or white. Sepals concave. Petals flat. Lip sessile on the base of the column, base saccate entire or 3-4 lobed. Column very short hooded. Anther 2 celled, beaked. Pollinia 4 subglobose adhering in pairs by a viscus. Pseudobulbs uninodal sessile on a stout rhizome.

Bracts semicircular	1. *P. imbricata.*
Bracts lanceolate	2. *P. parviflora.*
Bracts oblong ovate broad	3. *P. gibbosa.*
Stems elongate with swollen internodes ..	4. *P. articulata.*

1. Ph. imbricata, Lindl. in Hook. Exot. Flora II. t. 138. Gen. and Sp. Orch. Pl. 37. Bot. Reg. t. 1213 and 1777. Pseudobulbs crowded conic dark green 1-3 inches long. Leaf solitary elliptic lanceolate 6-12 inches long, petiole 1 inch long, or more. Raceme long decurved 1 foot long, peduncle slender. Bracts distichous semicircular $\frac{1}{3}$ inch broad. Flowers numerous pale flesh colour $\frac{1}{4}$ inch long. Upper sepal orbicular laterals boat shaped keeled. Petals linear oblong falcate. Lip boat shaped, side lobes broad rounded, terminal lobe bifid. Column wings broad. Capsule ellipsoid $\frac{3}{4}$ inch long. Lodd. Bot. Cab. t. 1934. Wight Ic. t. 907. Hook. fil. Fl. Brit. Ind. VI. 845. King. Ann. Bot. Gard. Calc. VIII. p. 144. Pl. 201. *Ph. pallida,* Lindl. Bot. Reg. XXI. sub. t. 1777. *Coelogyne imbricata* and *C. pallida,* Rchb. fil. Walp. Ann. VI. 238. *Ptilocnema bracteatum,* Don. Prodr. 33. *Cymbidium imbricatum,* Roxb. Fl. Ind. III. 460.

Selangor caves: Kwala Lumpur (Ridley); Perak (Scortechini, King's Collector); Lankawi Islands (Curtis 2561). Distrib. India, Ceylon, Sumatra, Java, Borneo.

A very variable plant in small points. The common form in the peninsula is the var. *coriacea,* Hook. fil. l.c. with coriaceous leaves.

2. Ph. parviflora, Hook. fil. Ic. Pl. 1891. *P. micrantha,* Fl. Brit. Ind. V. 847. Rhizome thick with stout roots, pseudobulbs 1-1½ inch long cylindric or ovoid, narrow or thick. Leaves elliptic lanceolate acute 1½-3 inches, ½-1½ inch across or wider. Scape slender 5 inches long flexuous. Bracts lanceolate. Flowers $\frac{1}{8}$ inch across about 35. Sepals ovate or ovate oblong acute. Petals smaller, all greenish pink turning pink. Lip boat shaped clawed, midlobe ovate rounded greenish white-yellow with an elevated mass in the centre. Column red. Anther broad and flat, rostellum broad entire. Capsules $\frac{1}{4}$ inch long.

Perak: Gunong Batu Putih (Wray), Larut Hills (Derry).

3. Ph. gibbosa, De Vr. Illustr. t. 10. Rhizome stout branched, pseudobulbs oblong conic, covered with sheaths 2-3 inches long. Leaves lanceolate or obovate with a long point coriaceous 6-7 inches long 1-3 inches across, petiole 1 inch long. Scape slender nodding 10-12 inches long, basal half nude, raceme flexuous, flowers about 20. Bracts broadly oblong ovate, $\frac{1}{4}$ inch long brown. Pedicels short. Upper sepal oblong lanceolate obtuse, laterals broadly oblong broader $\frac{1}{4}$ inch long very obtuse. Petals linear or broadly oblong, obtuse all white, reflexed. Lip base oblong boat-shaped, midlobe oblong bifid lobes rounded, deflexed, a pair of erect truncate teeth at its base, white, base beneath pinkish. Column curved hood very broad margin waved brown. Anther red flat. Rostellum long thin bifid.

Pahang: Kluang Terbang (Barnes). Distrib. Java.

The Javanese specimens have linear narrow petals, those of Pahang are much broader.

4. P. ARTICULATA, Lindl. Gen. and Sp. Orch. Pl. 38. Stems elongate pseudobulbous, internodes 2-6 inches long as thick as the little finger. Leaves 2 elliptic lanceolate acute 4-6 inches long 2 inches wide, petiole ½-1 inch long. Raceme from between the leaves, shorter 4 inches long. Bracts rhombic ovate ½-⅓ inch. Flowers small pink, ¼ inch long. Sepals upper orbicular or ovate, laterals ovate. Petals ovate. Lip boat-shaped, with 5 raised nerves at the base, midlobe bilobed. Column short, rostellum long acute. Capsule ⅔-¾ inch long. Hook. fil. Fl. Brit. Ind. V. 844. King. Ann. Roy. Bot. Gard. VIII. 146. Pl. 204 205. *P. Khasiana,* Rchb. fil. Walp. Ann. VI. 238. Bonplandia 1856, 329. *P. Griffithii,* Hook. fil. l.c.c. p. 845. Ic. Pl. t. 1881. *P. decurva,* Ridl. Journ. Linn. Soc. XXXII. 328. *Coelogyne articulata* and *C. Khasiana,* Rchb. fil. Walp. Ann. VI. 328.

Selangor: Pahang Track (Ridley); Perak (Curtis). Distrib. Himalayas, Burmah. The peninsular form is the small variety *Griffithii.*

28. CLADERIA, Hook. fil.

Terrestrial, climbing a short way on tree trunks. Leaves few ovate lanceolate plicate, narrowed into sheaths. Scape terminal erect, simple, or branched, rachis stout with short broad stiff bracts. Flowers large. Sepals obtuse, laterals oblique gibbous at base. Petals falcate oblanceolate. Lip concave, large three lobed. Column long curved footless, with no arms. Anther helmet shaped. Pollinia 2 with no disc, elliptic acute.

Species 1. Malayan.

C. viridiflora, Hook. fil. Brit. Ind. V. 810. Ic. Pl. 2083. Rhizome slender. Leaves green with darker mottlings 6-12 inches long, 1-2½ inch long, petiole ½ to 2 inches long. Scape 6 inches long, raceme at length 6 inches, with a long lanceolate acuminate leaf just below it. Bracts ⅛ inch long. Flowers 1 inch long green veined reticulately with darker. Sepals oblong subacute. Lip side lobes long subacute, midlobe orbicular retuse narrowed at the base broad, base pubescent, a club-shaped ridge on disc. Capsule oblong strongly ribbed, 3 inches long ½ inch through.

Singapore: Seletar (Ridley 71), Garden Jungle, Bajau; Johor: Kampong Simpai (Kelsall), Batu Pahat (Ridley); Malacca (Maingay); Pahang: Tahan River (Ridley); Perak: Dindings (Ridley), Sungei Rayah (King's Coll.); Penang: Government Hill (Curtis 2969). Distrib. Borneo, Sumatra.

II. Vandeae.

29. Eulophia, Br.

Terrestrial glabrous herbs, rhizome tuberous or pseudobulbous. Leaves several, appearing with or after the flowers. Scape lateral or subterminal. Sepals and petals free. Lip from the base of the column base saccate or spurred, side lobes erect. Column long or short with a broad base. Anther 2 celled. Pollinia 2 or 4 sessile or attached by a short caudicle to a discoid gland (disc).

Base of sepals prolonged into a spur .. .. 1. *E. squalida.*
Lip spurred.
Side lobes obtuse .. .. .. 2. *E. graminea.*
Side lobes acute, midlobe retuse .. 3. *E. Keithii.*

1. E. squalida, Lindl. Bot. Reg. 1841. Misc. 77. Pseudobulb conic short. Leaves developing with the flowers, lanceolate acuminate plicate 12-18 inches long, 1½ inch wide. Scape 1-3½ feet tall medium size. Bracts lanceolate acuminate half an inch long. Ovary and pedicel one inch. Upper sepal lanceolate cuspidate, laterals prolonged at the base into a conic cylindric mentum ¼ inch long brownish green half an inch long. Petals oblong ovate twice as broad white tinted pink. Lip longer articulated with the base of the column, side lobes rounded, midlobe longer oblong crisped veins in disc 4 thickened, base of lip ocreous, apex pale lilac side lobes veined pale ochre. Column broad much shorter than the petals, foot short and broad with a large entrance at the base to the spur wings and arms 0. Anther orange conic with two whitish knobs at the top. Pollinia 2 globose, caudicle short broad, disc broadly triangular. Capsule pendant fusiform 2 inches long. Hook. fil. Fl. Brit. Ind. VI. 6. *E. elata,* Hook. fil. l.c. 3. *Cyrtopera squalida,* Rchb. fil. Bonplandia 1857. 38. Lindl. Journ. Linn. Soc. III. 31.

Singapore: Tanglin, Chan Chu Kang (Ridley); Johor: Batu Pahat, Kota Tinggi (Ridley), Sedili River (Nanson); Malacca: Machap (Derry 383); Perak (Scortechini 2023). Distrib. Borneo.

Open grassy country common. It seems hardly distinct from *E. nuda,* Lindl.

2. E. graminea, Lindl. Orch. Pl. 182. Pseudobulbs cylindric conic often large, 4 inches long, 1 thick. Leaves grassy linear acute, about 6 inches long ¼ inch across, produced from the flowers. Scapes lateral 1-3 feet tall slender, branched, flowers small numerous an inch long. Bracts ⅛ inch acuminate. Sepals lanceolate linear acuminate acute. Petals a little broader green with reticulate brown markings. lip side lobes obtuse, midlobe obovate edge undulate crisped white veined with violet, with white hairs, three raised nerves on the disc,

spur short clubbed. Column slender erect, with no foot, nor arms. Anther broad with two purple processes at the top. Pollinia globose with a short broad caudicle and a rounded disc. Capsule elliptic 3 inches long. Lindl. Journ. Linn. Soc. III. 23. Hook. fil. Fl. Brit. Ind. VI. p. 2. *E. inconspicua*, Griff. Notul. 349. Ic. Pl. As. t. 326. Lindl. l.c.c.

Singapore (Wallich 1372), Chua Chu Kang (Ridley); Malacca (Griffith), (Cuming 2059), Bukit Sabukor (Derry 557); Johor: Batu Pahat (Kelsall 4066); Pahang: Sungei Meang (Ridley 1639); Penang Hill (Curtis); Lankawi: Kwah (Curtis). Distrib. Siam. Open sandy spots. Native name, Bawang Hantu.

3. E. Keithii, Ridl. Journ. Soc. XXXII. 333. Pseudobulbs 3-5 inches long 1 inch thick, cylindro-conic. Leaves grassy, linear acuminate 2½ inches long, ⅓ inch wide. Scape a foot long not branched. Flowers nine, about 1½ inch across. Bracts lanceolate acute ⅛ inch long, pedicels an inch long. Sepals ¾ inch long linear acute. Petals broader, all green. Lip green, disc of midlobe white with brown veins reticulated, side lobes falcate short, midlobe obovate retuse crisped, keels 3 undulate ending in a conical yellow callus, spur clubbed ¼ inch long. Column broad winged. Anther with two recurved red processes.

Lankawi (Curtis). Distrib. Siam.

30. Geodorum, Jack.

Terrestrial herbs, with a tuberous rhizome, and herbaceous plicate leaves. Scape from the rhizome, stout. Flowers small crowded in decurved racemes, pink yellow or white. Bracts narrow. Sepals and petals subsimilar. Lip sessile on the base of the column entire boat shaped, with a central ridge, and callus. Column short stout with low wings. Anther ovate. Pollinia 2 on a strap shaped caudicle.

Species 5 or 6 Indian, Malayan and Australian.

Lip oblong obtuse .. .. 1. *G. purpureum.*
Lip ovate acute .. .. 2. *G. citrinum.*

1. G.purpureum, R. Br. Ait. Hort. Kew Ed. II. V. p. 207. Hook. fil. Fl. Brit. Ind. VI. 16. Pseudobulbs short. Stem 3-4 inches tall. Leaves ovate lanceolate acuminate 9-12 inches long 3 inches wide. Scape 18 inches long raceme decurved, 2 inches, sheaths foliaceous. Bracts lanceolate acute ⅜ inch long. Flowers pink or white ½ inch long. Pedicels and ovary as long. Sepals oblong obtuse. Petals slightly broader. Lip saccate oblong apex entire or emarginate, pink, dotted with darker colour, with a central yellow patch or white with pink veins. Callus at base conic. Column broad and

short, with a short foot. King. Ann. Bot. Roy. Calc. VIII. p. 181, t. 215 (var. album). *G. fucatum,* Lindl. Bot. Reg. t. 1687.

Malacca: Rellau, base of Mount Ophir (Derry), Bukit Sadanen (Derry 385). Distrib. India, Siam. In open grassy spots.

2. G. CITRINUM, Jack. Andr. Bot. Rep. t. 626. Pseudobulb globose conic. Stem 4-6 inches long. Leaves ovate lanceolate to lanceolate 8-12 inches long 1-2 inches wide, narrowed into a petiole 3-6 inches long. Scape 10-18 inches long, with foliaceous sheaths. Flowers pure yellow and longer than in preceding species nearly 1½ inch across. Sepals and petals very broad ovate acute. Lip ovate acute yellow with brown veins. Column short and broad. Anther orbicular ovoid depressed. Lindl. Gen. and Sp. Orch. Pl. 176. Fol. Orch. 3. Bot. Mag. t. 2195. Hook. fil. Fl. Brit. Ind. VI. 17.

Penang: Balik Pulau (Curtis), Telok Bahang (Curtis 354), Pulau Ujong Duri (Curtis 3027). Distrib. Burmah, Siam.

31. CYMBIDIUM, Sw.

Epiphytes rarely terrestrial stems short, often pseudobulbous. Leaves very long and narrow or shorter and broader. Scape erect or pendulous, racemose flowers large. Sepals and petals subequal. Lip sessile at the column base, concave, side lobes erect, disc with two pubescent or glabrous ridges. Column long footless. Pollinia 2 subtriangular on a broad reniform disc.

Species about 30, tropical and subtropical. Asiatic, African and Australian.

Pseudobulbs none. Leaves very long lorate.

Scape pendulous. Leaves broad ..	1. *C. Finlaysonianum.*
Scape pendulous short. Leaves ½ inch wide	2. *C. pubescens.*
Scape erect, leaves narrow stiff ..	3. *C. acutum.*
Stem swollen, short leaves lanceolate	4. *C. lancifolium.*
Pseudobulbs oblanceolate scape pendulous	5. *C. Huttoni.*

1. C. FINLAYSONIANUM, Lindl. Gen. and Sp. Orch. Pl. 164. Stems very short forming large masses leaves lorate coriaceous thick 1 to 3 feet long wide apex bilobed. Raceme pendulous 2 feet long, flowers about 20. Bracts short ovate subacute, ⅛ inch long. Ovary and pedicel 1¼ inch long. Sepals oblong lorate obtuse an inch or more long, spreading. Petals lanceolate obtuse broader all olive yellow tinted red. Lip shorter, side lobes long acute dark pink, midlobe obovate retuse blunt white with a yellow line at base and two crimson spots and deep crimson patch at tip, keels 2 crimson purple on the disc. Column curved stout deep pink. Anther broad pustular. Capsule very large 2 inches long elliptic or ovoid. Hook.

fil. Fl. Brit. Ind. VI. 11. *C. Wallichii,* Lindl. l.c. 165. *C. pendulum,* Bot. Reg. 1840. t. 25. William's Orch. Album X. 437. *C. pendulum* var. *brevilabris,* Lindl. Bot. Reg. XXX. t. 24. *C. tricolor,* Miq. Choix t. 19.

Singapore: Chan Chu Kang, etc., (Ridley), Pulau Ubin; Johor: Tanjong Kopang, Batu Pahat (Ridley); Pahang: Kwala Pahang (Ridley 1640); Malacca: Merlimau (Derry); Selangor: Kwala Selangor (Ridley 7783); Perak (Scortechini); Penang (Porter Wall. Cat. 7358), Telok Bahang (Curtis 353). Common near the coast. Native names, Sakat Panggan daun. Bunga Chandarek. Distrib. Malay Islands.

This is really hardly distinct specifically from *C. aloifolium,* Sw. of India to which species I reduced it in Journ. Linn. Soc. XXXII. 333, but is a much finer plant.

2. C. PUBESCENS, Lindl. Bot. Reg. 1840. Misc. 75. 1841. t. 38. Habit of *C. Finlaysonianum,* but leaves very narrow 18 inches long ⅜ inch wide. Raceme short a foot long pendulous. Flowers an inch across about 16 in number. Sepals and petals narrow linear lanceolate greenish with a dark purple central bar. Lip base saccate lobes acute midlobe oblong entire, yellow with purple markings, pubescent, two median ridges broken in two. Capsule 2 inches long elliptic. Hook. fil. Fl. Brit. Ind. VI. 11.

Singapore (Cuming), Sungei Jurong (Ridley); Johor: Sungei Ban, Batu Pahat (Ridley); Lankawi Islands (Curtis). Distrib. Siam, Borneo.

There are intermediate form between this and *C. Finlaysonianum,* which are possibly hybrids, but I am more inclined to think this plant is only an extreme form of the preceding one. *C. pendulum,* Sw. King Annals Roy. Bot. Gard. Calc. 251. seems to be one of these intermediate forms. King gives it as collected in Perak by Wray No. 3738.

3. C. ACUTUM, Ridl. Journ. Linn. Soc. XXXII. 334. A tufted epiphyte with a thick rhizome. Leaves narrow grassy not articulated, 12 inches long ¼ inch wide. Scape erect or suberect (nodding in fruit) flowers few. Bracts ovate acute. Pedicel and ovary an inch long. Sepals lanceolate acute whitish with a median purple band, an inch long. Petals shorter. Lip shorter than the sepals, side lobes long obtuse white, edges and veins crimson, disc yellow with two keels thickened at the tips, midlobe ovate mucronate deep crimson with a central orange spot. Column straight violet purple. Anther yellow. Capsule fusiform 3 inches long, beaked. *C. Simonsianum,* King and Pantling Ann. Bot. Gard. Calc. VIII. 188. Pl. 250.

Perak: Larut Hills, Waterloo Estate (Ridley). Distrib. Sikkim and Assam. *C. Simonsianum* appears to be the same plant.

4. C. LANCIFOLIUM, Hook. Exot. Flora. t. 51. Terrestrial. Stem 1-3 inches long thick cylindric fleshy. Leaves 3 lanceolate acuminate 6-8 inches long 1 inch wide, base narrowed to a petiole. Scape erect 6 inches long with a few scattered sheaths. Flowers 5 in a lax raceme, an inch across. Bracts short ovate. Sepals oblong lanceolate acute dull green. Petals broader with a central pink dotted line. Lip pandurate entire flat, apex broad white with the edge at the base and some blotches on the blade crimson, a broad raised ridge from the base, and 2 short blunt ones in the centre. Column broad stout greenish spotted pink. Lindl. Gen. and Sp. Orch. Pl. 164. Journ. Linn. Soc. III. 30. Lodd. Bot. Cab. t. 927. Hook. fil. Fl. Brit. Ind. VI. 9. Ann. Bot. Gard. Calc. p. 185. t. 247. *C. Gibsoni,* Paxton Fl. Gard. III. 618. fig. 301. *C. javanicum,* Bl. Bijdr. 380. Lindl. l.c. 170. Griff. Ic. Pl. As. t. 300. fig. 1.

Malacca: Bukit Sadanen (Derry); Perak: Bujong Malacca (Ridley), (Scortechini). Distrib. India, Java, China, Japan.

5. C. HUTTONI, Hook. fil. Bot. Mag. 5676. A large epiphyte with obovoid oblanceolate pseudobulbs. Leaves 2 oblong obtuse thickly coriaceous 8 inches long, 4 inches broad. Raceme pendulous 6-8 inches long, with about 10 large flowers 1½ inch across. Bracts widely triangular. Sepals ovate oblong acuminate yellowish densely spotted in lines by chocolate. Petals falcate chocolate. Lip 3 lobed lobes broad obtuse, midlobe rounded orbicular with a channel ridge betwen the side lobes, coloured like the sepals. Column thick curved. Anther conic. *C. Stephensi,* Ridl. Journ. Bot. 1900. 71.

Perak: Larut Hills (Stephens). Rare. Distrib. Java.

32. DIPODIUM, Br.

Stems leafy with equitant leaves in Malayan species, terrestrial and leafless (Australian species). Leaves linear articulated. Racemes lateral long peduncled. Flowers moderately large. Sepals and petals similar spreading. Lip adnate to column base side lobes very small. Column short and broad with large wings. Anther small. Pollinia 2, caudicles 2 linear, disc rounded.

Species 6. Malayan, Australian and Pacific.

Stem scandent	1. *D. pictum.*
Stem erect	2. *D. paludosum.*

1. D. PICTUM, Rchb. fil. Xenia Orch. II. 15 and 20 t. 107. Stem climbing from the ground on trees and clasping with its roots, leaves flaccid linear acuminate distichous 8 inches long by 1 inch wide. Scape 10-12 inches tall. Flowers about an inch and a half

across. Sepals oblong lanceolate laterals oblique. Petals broader, all obtuse yellowish in front, blotched with Indian red on the back. Lip shorter base narrow oblong side lobes very small curved acute midlobe obovate, white with pink spots with a white woolly crest at the tip keels at the base 3 pink, woolly. Column short orange with broad rounded wings. Hook. fil. Fl. Brit. Ind. VI. 19. *Wailesia picta,* Lindl. Journ. Hort. Soc. IV. (1849) 262. Paxt. Mag. Bot. XVI. 321. *Grammatophyllum scandens,* Griff. Notul. III. 345. Ic. Pl. As. t. 324. *Leopardanthus scandens,* Bl. Rumph. IV. 47. Mus. Bot. I. 47. t. 15.

Singapore: Kranji, Changi (Ridley 3923); Malacca (Griffith); Pahang: Tahan River (Ridley); Perak: Larut Hills (Curtis); Selangor: Bukit Kuda (Ridley). Distrib. Sumatra, Java. In woods not rare.

2. D. PALUDOSUM, Rchb. fil. Xen. Orch. II. 15. Stem erect 1-2 feet tall. Leaves linear erect acuminate 6 inches long, ¼ inch wide. Scape one foot tall, raceme lax about 15 flowered. Flowers an inch across, ovary and pedicel ½ inch long. Bracts small ovate. Sepals oblong obtuse. Petals similar, all white with pink spots. Lip shorter cuneate oblong edges dentate, with two short tooth-like side lobes, centre pubescent white blotched with purple. Column stout yellow at the top. Hook. fil. Fl. Brit. Ind. VI. 19. Williams Orch. Album t. 422. *Grammatophyllum paludosum,* Griff. Notul. III. 344. *G. affine,* Griff. Ic. Pl. As. t.323. *Wailesia paludosa,* Griff. Bonplandia 1854. 93.

Malacca (Maingay), Ayer Panas (Griffith); Perak (Wray). In open swamps, now very rare. Distrib. Borneo, Labuan, Cochin China.

33. GRAMMATOPHYLLUM, Bl.

Epiphytes, stems pseudobulbous or terete. Leaves subcoriaceous. Scapes erect from the base of the short rhizome, racemose. Flowers large green or yellow with brown spots. Sepals and petals subsimilar spreading. Lip 3 lobed from the base of the column. Column tall, without wings foot very short, thick erect. Anther broad retuse at the top. Pollinia 2 broad, semioblong rounded, on 2 very short points attached to a broad disc. Capsule large elliptic pyriform.

Species 3-4 Malayan.

G. speciosum, Bl. Bijdr. p. 378. f. 20. Stems not pseudobulbous subterete grooved, 6 to 10 feet long through. Leaves flaccid linear 12-18 inches long one inch wide acute. Scapes stout 6-10 feet tall. Flowers very numerous 4 inches across. Pedicel 4 inches. Bracts lanceolate linear ½ inch long. Sepals and petals oblong obtuse. Petals wider yellow with brown spots. Lip side lobes subacute yellow,

midlobe oblong obtuse pubescent much shorter than the sepal dull pink, keels 3. Capsule oblong pyriform 6 inches long. Bl. Rumphia IV. 47 t. 191. Lindl. Gen. and Sp. Orch. Pl. 628. Miquel Fl. Ind. Bat. II. 708. Bot. Mag. t. 5157. Paxt. Fl. Gard. II. t. 69. Fl. des Serres t. 1386. Gard. Chron. 1878. II. 181 fig. 36. 1890. I. 289. fig. 46. Hook. fil. Fl. Brit. Ind. VI. 18. *G. fastuosum,* Lindl. Paxt. Fl. Gard. II. 159. *G. macranthum,* Rchb. fil. Xenia Orch. II. 16. *Pattonia macrantha,* Wight. Ic. t. 1750. *Gabertia scripta,* Gaud. Freyc. Voy. Bot. 425. *Cymbidium scriptum,* Swartz Schrad. Diar. 1799. 228. *Epidendrum scriptum,* L. Sp. Pl. 1351.

Singapore: Toas, Pulau Ubin (Ridley); Malacca: Tanjong Kling (Ridley), Hulu Chembong (Derry 1126); Selangor: Kwala Lumpur; Pahang: Tahan River (Ridley 2348); Perak: Dindings (Finlayson), (Scortechini); Kedah: Gunong Jerai 3000 feet alt. Distrib. Tenasserim, Java, Borneo, Solomon Islands.

34. Bromheadia, Lindl.

Stiff herbs terrestrial or epiphytic, rhizome branched stems compressed. Leaves distichous rigid, lanceolate flat or recurved pungent. Raceme terminal or rarely lateral, elongating, or short. Bracts persistent. Flowers medium size to small, white or yellow. Sepals lanceolate. Petals shorter and broader. Lip 3 lobed, spurless, lobes erect. Column elongate curved, without arms, wings or foot, hooded. Anther convex. Pollinia 2 semiovate with a wide emarginate disc. Rostellum emarginate. Capsule cylindric.

Species 8 Malaya, Siam and Burmah.

Terrestrial stems elongate, raceme terminal.	
Flowers white	1. *B. palustris.*
Flowers orange	2. *B. sylvestris.*
Stems tall raceme lateral	3. *B. rupestris.*
Epiphytic stems tall. Leaves lorate obtuse ..	4. *B. alticolia.*
Epiphytic small leaves lanceolate acute.. ..	5. *B. brevifolia.*
Leaves ensiform erect	6. *B. pungens.*
Leaves ensiform recurved	7. *B. aporoides.*
Leaves very narrow recurved	8. *B. scirpoidea.*

1. B. palustris, Lindl. Bot. Reg. XXVII. 1841. Misc. 184. XXX. 1844, 18. Stems tall wiry 1 to 6 feet high flattened. Leaves lanceolate obtuse 5-6 inches long 1-1½ inch wide. Racemes terminal gradually developing, 3 to 12 inches long. Bracts distichous boat shaped acute ¼ inch long. Flowers appearing singly, fragrant. Sepals lanceolate acute white or tinted pink, 1½ inch long. Petals shorter and broader. Lip side lobes lanceolate subacute white veined with violet, a median raised pubescent line on the disc, midlobe obovate

oblong, centre yellow, mealy, edges white, base spotted violet. Column white hood emarginate. Capsule sessile 2½ inch long. Hook. Bot. Mag. t. 4001. Wight Ic. t. 1740. Hook. fil. Fl. Brit. Ind. VI. p. 20. Ridley Journ. Linn. Soc. XXVIII. 336. *Br. Finlaysoniana,* Rchb. fil. Walp. Ann. VI. 630. 882. Miquel Fl. Jav. I. 708. *Grammatophyllum Finlaysonianum,* Lindl. Orch. Pl. p. 173. *Coelogyne caulescens,* Griff. Notulae III. p. 282.

Singapore common (Ridley); Johor: Batu Pahat (Ridley); Malacca (Cuming 2051), Mount Ophir (Derry 638); Perak: Taiping Waterfall (Ridley); Legeh: Tomoh (Machado); Kedah: Gunong Jerai (Ridley). Distrib. Cochin China, Sumatra, Java, Borneo. Common in open grass spots, attaining a great size in wet spots on mountain rocks. Native name "Poko Suraman."

2. B. SYLVESTRIS, Ridl. Journ. Linn. Soc. XXXIII. p. 337. Stems slender weak, 1-6 feet tall. Leaves lanceolate thin 5 inches long ¾ inch wide tip unequally bifid. Racemes 1-2 similar to those of *B. palustris.* Flowers smaller an inch long orange coloured. Sepals lanceolate acuminate. Petals wider. Lip shorter, side lobes erect obtuse yellowish with crimson veins, edge white midlobe ovate acute white, centre orange yellow. Column slender curved, yellow, base spotted crimson, hood entire. Anther ovate.

Singapore: Kranji in woods (Ridley); Johor: Gunong Panti (Ridley 4146), Gunong Pulai.

3. B. RUPESTRIS, Ridl. Journ. Linn. Soc. XXXII. 341. Terrestrial, stems five feet tall flattened. Leaves lorate lanceolate fleshy, unequally bilobed, 4 inches long ¾ inch wide. Flowers 2 or 3 in a tuft, lateral, ovary and pedicel ½ inch long. Sepals an inch long lanceolate obtuse pale yellow with red tint. Petals shorter broader pale yellow. Lip about as large long as the sepals, side lobes long falcate acute, white with crimson veins, midlobe more fleshy lanceolate yellow with red dots, edge crisped, elevated bar between side lobes yellow. Column yellow hood rounded.

Malacca, Mount Ophir at 4000 feet alt. (Ridley 3143); Kedah: Gunong Jerai (Ridley).

4. B. ALTICOLA, Ridl. Journ. Linn. Soc. XXVIII. p. 398. Pl. XLII. Epiphytic with a much branched rhizome, forming large masses of stems 1-3 feet long, flattened. Leaves lanceolate lorate obtuse apices bilobed thinly coriaceous 6 inches long ½ inch wide. Racemes terminal flexuous 2-3 inches long. Bracts ¼ inch long boat shaped acute. Flowers opening singly white fragrant. Sepals lanceolate acute an inch long, laterals somewhat oblique. Petals lorate lanceolate, smaller, all white. Lip shorter pubescent narrow side lobes lanceolate acute white tipped with violet, elevated ridge between them yellow, midlobe ovate subacute centre fleshy yellow edges white.

Column curved white edges purple, hood ovate entire. Anther white pustular. Capsule erect sessile 3 inches long.

Singapore: Bukit Panjang, Bukit Timah (Ridley); Pahang: Tahan River (Ridley); Mount Ophir (Ridley).

5. B. BREVIFOLIA, Ridl. Journ. Linn. Soc. XXXII. p. 340. Stems several in a tuft 6-8 inches long flattened, covered with distichous lanceolate acute deep green leaves erect ½ inch long, ¼ inch wide. Flowers from a terminal tuft of bracts, ½ an inch long, ovary and pedicel red ¼ inch long. Sepals lanceolate acuminate, acute, rosy. Petals shorter whitish yellow hairy at the base, disc between them spotted red, midlobe ovate white, centre yellow. Column slender, hood bilobed. Capsule pyriform ½ inch long.

Perak: Hermitage Hill (Ridley), Larut Hills (Ridley). Distrib. Borneo.

6. B. PUNGENS, Ridl. l.c.c. Stems 6 to 8 inches long flattened. Leaves ensiform flat stiff pungent, erect. Racemes 1 inch long almost covered with brown bracts. Flowers 1½ inch across, pedicels as long. Sepals lanceolate acute yellowish. Petals narrower white. Lip oblong with indistinct side lobes, midlobe emarginate crisped with a yellow lobed thick central callus. Column nearly straight. Anther oblong flat.

Malacca: Mount Ophir (Ridley).

7. B. APOROIDES, Rchb. fil. Otia. Bot. Hamb. p. 44. Epiphyte, tufted. Stems numerous 4 inches long. Leaves ensiform stiff recurved 4 inches long ¼ inch wide. Racemes very short crowded hardly ¾ inch long with numerous brown lanceolate bracts. Flowers about an inch across. Sepals lanceolate acute yellowish. Petals smaller. Lip as long oblong pandurate, side lobes obtuse with the median line elevated to the base of the midlobe yellow, midlobe oblong obtuse crisped whitish with two purple spots at the base and a central low orange coloured spathulate callus. Column slender hood retuse. Ridley Journ. Linn. Soc. XXVIII. p. 338.

Singapore: Bukit Timah (Ridley); Malacca: Mount Ophir (Ridley); Perak (Scortechini), Hermitage Hill (Ridley). Distrib. Burmah, Sumatra.

8. B. SCIRPOIDEA, Ridl. Journ. Bot. 1900. p. 71. Epiphyte. Stems slender flat, 6 inches long. Leaves 4 to 5 narrow flat curved pungent 4½ inches long $\frac{1}{16}$ inch wide. Racemes several ⅓ inch long crowded in a head with numerous ovate imbricate bracts. Flowers an inch across, pedicels ¼ inch long. Sepals lanceolate acute, yellowish with a median line. Petals broader pale yellow. Lip side lobes ovate yellowish with purple dots, midlobe yellow with two pink spots. Column thin broad.

Pahang: Tahan River (Ridley); Johor: Tebing Tinggi (Ridley); Perak: Ipoh (Ridley 10129). Distrib. Borneo.

35. Polystachya.

Epiphytes with short stems oblong lanceolate leaves thinly coriaceous. Inflorescence racemose or panicled terminal erect, base covered with sheaths. Flowers small green yellow or pink subsessile. Upper sepals lanceolate, laterals triangular, adnate to the foot of column. Petals very narrow. Lip jointed on the column foot 3 lobed, clawed, side lobes small. Column short broad foot long. Anther 1 or 2 celled. Pollinia 4 ovoid usually with a broad disc. Capsules elliptic.

Species 100. S. America, Africa, India, Malaya.

Lip narrow side lobes long, midlobe ovate ..	1. *P. singapurensis.*
Lip broad three lobed at the apex	2. *P. penangensis.*
Lip broad side lobes short, midlobe oblong ..	3. *P. siamensis.*

1. P. singapurensis, Ridl. Journ. Linn. Soc. XXXII. 343. Pseudobulbs globose ¼ inch long. Leaves 2-4 inches long, one inch wide, oblong lorate. Scape 2-6 inches long rachis of racemes pubescent, sheathed up to the flowers, raceme solitary or several. Flowers very small yellowish green. Bracts ovate acuminate half as long as the pedicel. Sepals bullate, upper one lanceolate laterals triangular. Petals narrow linear spathulate. Lip narrow thin side lobes falcate linear acute, midlobe longer ovate pulverulent, spotted pink inside. Column short foot long, rostellum absent.

Singapore: Sungei Morai on trees (Ridley).

2. P. penangensis, Ridl. l.c. 344. Pseudobulbs conic one inch long, slender, branches an inch long. Bracts linear setaceous. Flowers thin yellow, bullate. Upper sepal lanceolate acute laterals triangular acute. Petals narrower spathulate. Lip broad side lobes short ovate midlobe ovate obtuse hardly longer, pubescent yellow with a brown median line. Column thick and short. Anther broad. Capsule ½ inch long, reticulated between the ribs.

Penang: Government Hill (Curtis 1006).

3. P. siamensis, Ridl. l.c. 343. Pseudobulbs ½-1 inch long conic. Leaves 5 inches long by ½-1 inch wide, lorate or oblong obtuse or subacute. Inflorescence, racemose or panicled, 4-12 inches long. Flowers large and more fleshy than the two preceding species, rachis pubescent. Bracts ovate subulate. Sepals ovate lanceolate, laterals triangular green. Petals much narrow falcate acute white. Lip obovate mealy yellow broad, side lobes small narrower falcate obtuse, midlobe much longer broad rounded apex retuse. Column short.

Pollinia 4 caudicle broad oblong. Capsule narrow ellipsoid ⅜ inch long not reticulate.

Perak: Dindings at Lumut (Ridley 10293); Lankawi: Kwah (Ridley and Curtis 8301). Distrib. Siam.

36. Leucolena, Ridl.

Leafless saphrophyte, with an elongate fusiform rhizome. Stem erect slender with a few scattered sheaths, raceme few flowered. Flowers small, upper sepal lanceolate obtuse, laterals conic. Petals adnate to upper sepal. Lip base narrow apex bilobed with a short median tooth. Column long with very long decurved arms. Anther ovate papillose attached to the top of the column by a very long filament. Pollinia 2 pyriform on a single quadrate disc.

Species 1.

L. ornata, Ridl. Journ. Linn. Soc. XXVII. p. 340. Pl. 43. Stem 9 to 12 inches tall olive coloured, succulent. Flowers about 7. The upper sepal and petals ¼ inch long olive green, ¼ inch long, laterals sepals olive colour with two darker streaks, and a rosy base. Lip white, centre raised violet. Column white.

Malacca: in dense dark woods Bukit Sadanen (Derry). Lower woods of the Ophir range (Ridley). Rare. The affinity of this plant is altogether obscure.

37. Luisia, Gaud.

Epiphytes stems terete rigid. Leaves elongate terete. Flowers few on short lateral spikes, small. Bracts very short thick persistent. Sepals subequal. Petals often narrower, and longer. Lip sessile on the base of the column, lateral lobes small, midlobe oblong or rounded, flat spurless. Column very short. Anther two celled.

Species 15. India, Malaya and Pacific Islands.

Petals not much longer than the sepals ..	1. *L. brachystachys.*
Petals much longer than sepals.	
Lip shorter than sepals	2. *L. antennifera.*
Lip longer than sepals	3. *L. tristis.*

1. L. brachystachys, Bl. Rumphia IV. 50. Mus. Bot. I. 64. Stem stout slightly flexuous, 3 inches long ⅛ inch through, sheaths ½ inch long, roots stout and stiff. Leaves 4-6 inches long blunt. Raceme short ¼ inch long with short clasping sheaths. Flowers 3-4 small, pedicel and ovary slender ¼ inch long. Upper sepal oblong ovate ⅛ inch long, laterals lanceolate. Petals lanceolate subacute broad, little larger than the sepals, all green edge pink. Lip fleshy oblong ovate blunt entire, with a large depression at the base dark

crimson tip greenish. Column short crimson, arms rounded blunt. Capsule ¾ inch long. Rchb. fil. Xen. Orch. I. 204. t. 78. fig. 1. Lindl. Fol. Orch. 3. Hook. fil. Fl. Brit. Ind. VI. 23. *Mesoclastes brachystachys,* Lindl. Gen. and Sp. Orch. Pl. 45.

Lankawi Islands (Curtis). Distrib. India, Siam.

2. L. ANTENNIFERA, Bl. Rumph. IV. 50. Mus. Lugd. Bat. I. 64. Stem 2 feet tall, stout. Leaves obtuse 4-5 inches long, sheaths ½-1 inch long. Racemes stout, ½ inch long with ovate bracts. Flowers ½ inch across. Sepals oblong subacute. Petals longer narrow linear from a broader base, all greenish. Lip shorter oblong ovate purple with a transverse groove near the base. Column short and thick purple. Anther flat yellow oblong rounded. Pollinia globose, caudicle short and broad, disc as large. Capsule 1½ inch long narrowed at the base, strongly keeled. Rchb. fil. Xen. Orch. I. 265. t. 78. fig. 2. Hook. fil. l.c. 25.

Pahang: Pulau Chengei (Ridley 2349); Perak (Scortechini). Distrib. Java, Borneo.

3. L. TRISTIS, Hook. fil. Fl. Brit. Ind. VI. 25. Stem stout long. Leaves upcurved 4-5 inches long, thick blunt sheaths ¾ inch long. Racemes short 1-2 inches long thick. Flowers 3 or more. Upper sepal oblong blunt hooded ½ inch long laterals obliquely triangular lanceolate acute, densely spotted pink. Petals linear base broader twice as long as sepals white tip pink. Lip longer than sepals base oblong nearly straight, terminal lobe much broader ovate cordate blunt deep purple. Column broad and thick. *Cymbidium triste,* Willd. Sp. Pl. IV. 99. *Epidendrum triste,* Forst. Prodr. 314.

Penang: Penara Bukit (Curtis 1176).

38. ADENONCOS, Bl.

Small epiphytes. Leaves distichous linear or oblong fleshy. Racemes very short few flowered. Flowers very small. Sepals lanceolate. Petals smaller. Lip flat fleshy entire or with very small side lobes. Column short arms very small. Anther 1 celled. Pollinia 4 with a linear caudicle and large disc. Capsule oblong or elliptic.

Species 3. Malay Islands.

Leaves flat lorate obtuse	1. *A. major.*
Leaves thick fleshy linear oblong acute ..	2. *A. virens.*
Leaves thick fleshy very narrow subterete ..	3. *A. parviflora.*

1. A. MAJOR, Ridl. Journ. Linn. Soc. XXXVII. p. 350. Stems 6 to 10 inches long. Leaves lorate obtuse 2-3 inches long, ⅜ inch wide, sheaths ¼ inch long wrinkled. Flowers sessile solitary axillary

green. Bracts 3 ovate coriaceous, as long as the short ovary. Sepals ovate lanceolate acute $\frac{1}{4}$ inch long. Petals much smaller linear acute. Lip cuneate obovate, side lobes minute, midlobe broad apex rounded, keel short papillose. Capsule oblong $\frac{1}{4}$ inch long.

Johor: Batu Pahat (Ridley); Pahang: Kota Glanggi (Ridley); Kedah: Gunong Jerai (Ridley).

2. A. VIRENS, Bl. Bijdr. p. 381. Stems 2-6 inches long. Leaves linear oblong acute recurved very fleshy 1 inch long $\frac{1}{8}$ inch wide, sheaths wrinkled $\frac{1}{8}$ inch long. Racemes very short 3-4 flowered. Flowers small green scented. Bracts $\frac{1}{16}$ inch long ovate. Pedicels and ovary as long. Sepals lanceolate acuminate, laterals subfalcate. Petals smaller. Lip entire cordate acute with a granular callus at base. Ridley Journ. Linn. Soc. XXXII. 349. *Microsaccus virens*, Hook. fil. Fl. Brit. Ind. VI. p. 77.

Singapore: Kranji (Ridley); Johor: Tanjong Kopang (Ridley); Selangor: Petaling (Ridley); Ginting Bidai: Kwala Lumpur caves (Ridley 8171); Perak (Scortechini). Distrib. Java.

3. A. PARVIFLORA, Ridl. l.c. 350. Stems 2-4 inches tall. Leaves linear acute thick recurved, 1-2 inches long very narrow. Flowers very small sessile. Bracts minute ovate. Sepals ovate oblong acute hardly $\frac{1}{8}$ inch long. Petals linear smaller, all ochreous. Lip shorter ovate acute purple, side lobes obtuse erect short. Capsule $\frac{1}{4}$ inch long elliptic

Selangor Caves: Kwala Lumpur (Kelsall).

39. ACAMPE, Lindl.

Stems stout, not very tall. Leaves coriaceous lorate. Racemes short flowers medium size. Sepals and petals subsimilar connivent. Lip spurless or near so three lobed often pubescent. Column thick conic. Pollinia with a narrow caudicle and oval disc.

Species 4 or 5. African, Indian and Malayan.

A. PENANGIANA, Ridl. Journ. Linn. Soc. XXXII. 358. Stem short and thick. Leaves lorate stiffly coriaceous 7 inches long $1\frac{1}{2}$ inch wide. Raceme $2\frac{1}{2}$ inch long, peduncle thick. Bracts ovate obtuse. Flowers crowded at the end of the peduncle an inch across, fleshy connivent peduncle thick. Sepals $\frac{1}{2}$ inch long oblong ovate broad obtuse. Petals narrower spathulate, all yellow with red spots on the back and bars in front. Lip a little longer quite spurless side lobes curved long obtuse, midlobe ovate all yellow with three red streaks on the side lobes, pubescent between the lobes. Column very short base broad yellow, with two pink spots at the base. Anther ovate obtuse, arms short erect.

Penang: Government Hill (Curtis).

40. Stauropsis, Benth.

Stems stout tall or short. Leaves lorate bilobed at the apex very coriaceous distichous. Racemes lateral, very tall or short flowers large showy fleshy. Sepals oblong, petals a little smaller. Lip adnate to base of column short, spurless, side lobes short, midlobe oblong, an oblong callus at the base. Column short broad footless, without wings or arms. Rostellum bifid short, an entire or lobed processes from below the stigma. Anther conic one celled. Pollinia 2 on a broad caudicle with a reniform or triangular disc.

Species 2 or 3. Malayan.

S. gigantea, Benth. Gen. Plant III. 572. Stem short very stout. Leaves lorate very thick 1 to 2 feet long, 2-3 inches wide. Raceme short 6 to 15 inches long. Flowers about 12-15 fleshy 2 inches across, ovary and pedicel thick 1 inch and long, bracts very short. Upper sepal oblong obtuse, laterals broader subfalcate, yellow with pale red spots. Petals narrower spathulate obtuse, similarly coloured. Lip half as long as sepals base boat-shaped pink, side lobes very short, midlobe fleshy oblong with three low ridges, yellow. Callus broad conical. Column very short and broad, stigma large, stigmatic process retuse. Pollinia caudicle short, disc reniform. Capsule very large. Hook. fil. Fl. Brit. Ind. VI. 27. *Fieldia gigantea,* Rchb. fil. Xen. Orch. II. 39. Walp. Ann. VI. 871. *Vanda gigantea,* Lindl. fi. l.c. 38. t. 112. Ill. Hort. 1861. 277. *Vanda Lindleyana,* Griff. Notul III. 353.

Lankawi: Kwah; Terutau (Curtis). Distrib. Burmah, Siam.

41. Phalaenopsis, Bl.

Epiphytes stems short, leaves oblong or obovate few, coriaceous. Racemes short or long, sometimes panicled. Flowers usually medium size to large showy. Sepals subequal. Petals often larger. Lip spurless, fleshy or thin, clawed or adnate to the column base, side lobes erect, usually with a forked or entire callus. Column with or without a foot, rather long. Anther 2 celled. Pollinia 2 with a linear or spathulate caudicle and a disc.

Species about 25, Indian, Cochin China and Malayan.

Scapes short. Rachis of raceme flattened .. 1. *Ph. cornu-cervi.*
Rachis not flattened but thickened.
Lip glabrous .. .. 2. *Ph. violacea.*
Lip hairy at the tip .. .. 3. *Ph. sumatrana.*
Scapes tall slender sometimes branched.
Lateral sepals free from the column foot.
Midlobe of lip narrow acute .. .. 4. *Ph. muscicola.*
Midlobe obovate rounded .. .. .. 5. *Ph. Kunstleri.*
Lateral sepals adnate to column foot .. 6. *Ph. Esmeralda.*

1. Ph. cornu-cervi, Par. and Rchb. fil. Hamb. Gartenz. 1860. 116. Stem short. Leaves 5-6 lorate obtuse 6 inches long 1 inch wide. Scapes over a foot long or short, base terete, rachis often branched flattened racemes 3 inches long flexuous. Bracts ovate subacute. Ovary and pedicel an inch long. Sepals lanceolate, laterals acute ¾ inch long. Petals shorter and narrower, all yellow with brown blotches. Lip ¼ inch long, side lobes oblong erect white with violet spots inside, midlobe reniform, or ovate acute, white, callus at base of midlobe tooth-like violet with a long slender forked process at its base. Column with a short foot, tall yellow, two red processes at the base. Anther conic. Pollinia subglobose with a long slender caudicle. Rostellum long and narrowly bifid. Rolfe. Gard. Chron. 1886. II. 276. Hook. fil. Fl. Brit. Ind. VI. 29. *Polychilus cornucervi,* Breda. Orch. Jav. t. I. Bot. Mag. t. 5570.

Sungei Ujong: Jelebu (Davison); Seremban (Braddon); Perak (Scortechini); Lankawi (Curtis). Distrib. Burmah, Sumatra, Java, Borneo, Siam.

Very variable in size of flowers and length of scape, a hybrid between this species and *P. violacea* has been found more than once in Perak, and is perhaps the plant described as *P. Valentini,* Rchb. fil. Gard. Chron. 1886. p. 262.

2. P. violacea, Teysm. and Binn. Bat. Tijdschr. XXIV. 10. Leaves elliptic or oblanceolate acute. Scape 3-12 inches long, stout, bracts ovate acute. Flowers 1-3 inches across, rachis thickened sometimes branched. Sepals lanceolate, laterals broader oblique. Petals smaller oblanceolate, cream white more or less marked purple. Lip narrow side lobes oblong truncate, midlobe spathulate or obovate violet purple, a single bifid callus at its base. Column rather long. Anther conic. Capsule cylindric 5 inches long. Rchb. fil. 1878. II. 234. 1881. II. 145. fig. 32. 187. Rolfe. Gard. Chron. 1886. II. 277. Williams Orchid Album t. 182. (var. *Murtoniana*), Ill. Hort. 1855. 173. (var. *Schroderi*), Hook. fil. l.c.c. 29. *Stauritis violacea,* Rchb. fil. Hamb. Gartenz. 1802. 34.

var. *typica.* Sepals and petals carnation with green tips, side lobes of lip yellow dotted purple, lip purple.

Perak (Scortechini).

var. *Murtoniana,* Rchb. fil. Sepals and petals cream yellow, inner half of sepals purple, side lobes orange.

Perak: Kinta (Murton); Bidor (Curtis). Distrib. Sumatra.

3. Ph. sumatrana, Korth. and Rchb. fil. Hamb. Gartenz. XVI. 1860 p. 115. Leaves five or six oblanceolate obtuse, a foot long, and 4 inches wide, shining. Scapes several a foot long, rachis flattened 4 angled, sometimes branched, about 6 inches long. Bracts ovate cymbiform ¼ inch long. Flowers 2 inches across fragrant. Upper sepal

oblanceolate, laterals much broader. Petals lanceolate narrowed at base, white or yellowish barred red. Lip ¾ inch long, side lobes oblong truncate, with a tooth on the inner side, white and orange in the inside, disc with 3 two toothed calli in a row, midlobe oblong elevated in the midlobe, white with crimson spots, a woolly tuft towards the end. Column rather tall, hooded, hood toothed, arms short incurved two toothed. Capsule 6 inches long. Bot. Mag. t. 5527. Flore des Serres t. 1644. *P. zebrina,* Teysm. and Binn. Pl. Cult. in Hort. Bogor. p. 320.

Johor: Batu Pahat (Ridley). Kwala Sembrong (Kelsall); Perak: Bidor (Curtis). Distrib. Sumatra, Borneo.

4. Ph. muscicola, Ridl. Trans. Linn. Soc. III. p. 373. Leaves oblanceolate obtuse, 6 inches long, two inches wide. Scape slender 6-8 inches long sometimes branched, rachis not thickened the flowers often ¼ inch apart. Bracts ovate small. Flowers an inch across. Sepals lanceolate acute. Petals subspathulate acute white spotted chestnut. Lip side lobes 4 angled tooth like, yellow spotted with chestnut, midlobe narrow tongue shaped apex decurved, rosy, an oblong bifid callus between the side lobes, and a lanceolate blunt one at the base of the midlobe. Capsule linear narrow 3 inches long.

Pahang: Tahan River (Ridley). On mossy trees in dense jungle.

5. Ph. Kunstleri, Hook. fil. Fl. Brit. Ind. VI. 30. Leaves obovate oblanceolate, or elliptic lanceolate acute 4-6 inches long 2½ wide. Scape about as long few flowered rachis thickened. Bracts very small ovate. Flowers 1-1½ inch across. Upper sepal obovate obtuse greenish yellow with or without a red bar, laterals broader oblique, yellow with a transverse red bar. Petals spathulate or obovate similarly coloured. Lip side lobes oblong truncate denticulate, white, midlobe obovate apex rounded, orange with a white raised central bar and 3 indian red streaks on each side, a bifid callus at the base of the midlobe. Column narrowed in the middle greenish, hood ovate. Hook. fil. Ann. Roy. Bot. Gard. Calc. V. 58. *Ph. Denisiana,* Cogniaux. Gard. Chron. 1899. 82. Dict. Icon. des Orchidees Phal. 6.

Perak (Scortechini, Kunstler). Tambun Hot Springs near Ipoh, (Ridley; Tapah: Sungei Siput (Curtis); Dindings (Curtis). Distrib. Philippines (fide Cogniaux).

6. Ph. Esmeralda, Rchb. fil. Gard. Chron. 1874. 582. Leaves 4 to 6 inches long 1½-2 inches wide oblanceolate obtuse dull green. Scape erect 1 to 2 feet tall simple or branched. Bracts short ovate. Flowers an inch across white rose or crimson. Upper sepal oblanceolate obtuse, laterals oblique ovate adnate to the column foot. Petals obovate. Lip with a long claw, with two narrow white lobes, side lobes oblong truncate broad yellow midlobe longer fleshy lanceolate

blunt violet purple. Column olive yellow stout with two bosses at the base. Rostellum rather long incurved. Stigma large ovoid. Rev. Hort. 1877. t. 107. Williams Orchid Album VII. t. 21. Floral Magazine N. S. t. 258. Cogniaux Dict. Icon. Phal. Pl. 5. Hooker. Bot. Mag. 7196. Hook. fil. Fl. Brit. Ind. VI. 31. *P. antennifera,* Rchb. fil. Gard. Chron. 1878. 398. 1882. 520. *P. Buyssoniana,* Rchb. fil. Gard. Chron. 1888. p. 295.

Lankawi Islands (Curtis); Kedah: Setul (Ellis); Patani (Anandale). Distrib. Burmah, Cochin China and Siam.

42. Doritis.

Epiphytes, with the habit of *Phalaenopsis* with usually small flowers, the column sometimes and the foot longer and forming a mentum with the side lobes of the lip.

Species about 5, Indian and Malayan.

D. Wightii, Benth. Gen. Pl. III. 574. Leaves few 2-3 oblanceolate thinly coriaceous 6 inches long 2 inches wide. Inflorescence panicled with few branches, 7 inches long, rachis thickened. Flowers $\frac{3}{4}$ inch across. Bracts very small ovate. Pedicel and ovary $\frac{1}{2}$ inch long. Upper sepal oblong acute, laterals larger obtuse curved. Petals smaller, all white tipped green. Lip side lobes obovate cuneate rounded white with violet rose streaks, midlobe obcordate retuse violet pink, with a bifid callus white, between the side lobes mentum very short. Column curved pink. Anther beaked. Pollinia globose, pedicel long dilated upwards disc oval. Hook. fil. Fl. Brit. Ind. VI. 32. Ann. Bot. Gard. Calc. V. 59. King and Prain. Vol. 8. 265. *Phalaenopsis Wightii,* Rchb. fil. Bot. Zeit. 1862. 214. *Ph. alboviolacea,* Ridley Trans. Linn. Soc. III. p. 373. *Aerides latifolium,* Thw. Enum. 430.

Malacca: Bukit Bangkong (Derry); Pulau Tiuman (W. Nanson); Perak: Larut Hills (Stephens), (Curtis), Lankawi (Curtis). Distrib. India, Burmah, Ceylon. Rather rare.

43. Staurochilus, Ridl.

Epiphyte, stem tall climbing with its long roots. Leaves distichous lorate, apex bilobed, coriaceous. Raceme lateral. Flowers large, expanded. Sepals oblong, laterals falcate. Petals narrower. Lip spurless short side lobes short erect, midlobe 3 lobed. Column short thick, with erect arms. Anther ovate beaked. Pollinia 2 on a spathulate caudicle, with an elliptic disc.

Species 1. Siamese and Malayan.

S. fasciata, Ridl. Journ. Linn. Soc. XXXII. 350. Stem stout. Leaves 5 inches long $\frac{1}{2}$-$\frac{3}{4}$ inch wide obtuse, sheaths $\frac{1}{2}$ inch long, ribbed. Raceme 4-6 inches long, rachis grooved. Bracts ovate acute persistent. Flowers $1\frac{1}{2}$-2 inches across fragrant, ovary and pedicel $\frac{3}{4}$ inch

long. Sepals oblong acute, laterals falcate. Petals spathulate narrower, all yellow banded with red. Lip half inch long, white slightly pubescent side lobes acute erect midlobe of three nearly equal lobes, mid one narrower callus at the base linear oblong toothed. Column red. Anther yellow. *Trichoglottis fasciata,* Rchb. fil. Gard. Chron. 1872. p. 699. Orchid Album V. t. 208.

Lankawi: Terutau (Curtis 2818) on rocks. Distrib. Siam.

44. Vanda.

Epiphytic or terrestrial plants. Leaves coriaceous flat or terete succulent. Flowers large showy racemose or panicled. Sepals and petals subequal. Lip large base saccate or spurred, side lobes large or small, midlobe fleshy or thin. Column short. Anther 2 celled.

Species about 20. Tropical Asia and Australia. The thin flowered species including the only native one would be better excluded from the genus.

V. Hookeriana, Rchb. fil. Bonplandia 1856. 324. Gard. Chron. 1882 II. 488. Scandent stems slender, about 12 feet long. Leaves terete 2-3 inches long erect. Inflorescence lateral racemose or panicled with few branches, peduncle 6-8 inches long. Flowers 2-3 inches across, thin textured, pedicel and ovary an inch long. Upper sepal obovate half inch long pale rose, laterals much larger oblong oblique, obtuse with a setaceous process on the back, white with a few pink spots. Petals broadly obovate twisted, broader and shorter than the lateral sepals pale rose. Lip large 1½ inch long, side lobes oblong acuminate obtuse deep purple, midlobe broad large three lobed side lobes oblong dilated at apex and rounded, midlobe oblong obovate white or rose dotted crimson. Callus conic blunt grooved white at mouth of the very short spur. Column fairly long with a long foot pink. Ill. Hort. 1883. t. 484. Reichenbachia II. 74. Orch. Alb. t. 73. Hook. fil. Fl. Brit. Ind. VI. 50.

Perak (Scortechini, Wray), Kinta Valley (Ridley, etc.); Johor: Kwala Batu Pahat (Kelsall). Distrib. Borneo. Scrambling over bushes in open swamps.

45. Renanthera, Lour.

Stems tall scandent. Leaves oblong obtuse. Inflorescence panicled. Flowers large or small. Sepals and petals spreading. Lip small articulated at base of column side lobes broad truncate, midlobe short tongue shaped base of lip between the lobes spurred, spur short conic. Column short and broad with no foot arms short incurved. Anther broad one celled. Pollinia 2, caudicle broad or rather narrow, disc broad.

Species about 8. Cochin China, Burmah, Malaya.

Stem tall 10-30 feet, leaves oblong, broad.

Flowers large yellow and brown	1. *R. arachnitis.*
Flowers large pink	2. *R. Maingayi.*
Flowers large white	3. *R. alba.*
Flowers very small red	4. *R. elongata.*
Stem short, leaves long, narrow	5. *R. matutina.*

1. R. ARACHNITIS, Lindl. Gen. and Sp. Orch. Pl. p. 217. Stems 20 to 30 feet long. Leaves lanceolate lorate obtuse, six inches long 1½ inch wide. Racemes or panicles very long, many flowered. Bracts ¼ inch long obtuse. Flowers 3 inches across, scented of musk. Upper sepal linear oblong spathulate laterals shorter falcate. Petals linear oblong spathulate abruptly falcate, all yellow with chocolate blotches. Lip half inch long, side lobes broad quadrate yellow splashed with red edges purple brown, midlobe hardly longer fleshy oblong cuneate acute fleshy pink with a large conic acute callus near the tip. Column short very broad white. Anther very broad flat. *Arachnis moschifera,* Bl. Bijdr. 365. t. 26. *Arachnanthe moschifera,* Bl. Rumphia IV. t. 196. 199. Hook. fil. Fl. Brit. Ind. VI. 28. *Aerides arachnitis,* Sw. Schrad. Journ. 1799. 293. Willd. Sp. Pl. IV. 131. *Renathera Flos-Aeris,* Rchb. fil. Xen. Orch. I. 88. Walp. Ann. VI. 878. *Limodorum Flos-Aeris,* Sw. Nov. Act. Upsal 1740. 37. *Epidendrum Flos-Aeris,* Linn. Sp. Pl. 1348.

Perak: Kinta (King's Collector). Distrib. Java, Borneo. Native name "Angrek Bunga Kasturi," and usually known as the Scorpion Orchid by residents.

2. R. MAINGAYI, Ridl. Journ. Linn. Soc. XXXII. 353. Stems like those of *Arachnitis.* Leaves thinner 5 inches long 1½ inch wide. Flowers in panicles or racemose slightly smaller. Sepals linear oblong, 1½ inch long, laterals not curved. Petals broadly dilate and bent at the tip, all mottled salmon pink and white. Lip side lobes broad rounded spreading, midlobe oblong apex ovate, all pink with darker stripes and yellow blotches on the side lobes. Column yellowish. Anther ovate subacute. Pollinia globose caudicle linear at base dilated to the broad disc. *Arachnanthe Maingayi,* Hook. fil. Fl. Brit. Ind. VI. 28.

Johor: Batu Pahat (Kelsall); Malacca (Maingay). Distrib. Islands south of Singapore, often cultivated in Singapore. The flowers vary much in the proportion of pink and white.

3. R. ALBA, Ridl. l.c.c. Stems 15 to 20 feet long. Leaves lorate obtuse 3 inches long 1½ inch wide, often hard and brittle and denticulate at the edges at the base. Panicle long, flowers 3 inches across. Bracts ovate. Sepals linear spathulate obtuse 1½ inch long all similar. Petals a little smaller, white. Lip side lobes broad rounded yellowish

white with pink dots, midlobe tongue shaped rosy violet with darker median stripes two violet streaks and two violet spots between the lobes. Column white edge violet short and broad. Anther orange. *Arachnanthe alba,* Ridl. Trans. Linn. Soc. III. p. 369.

Singapore: Pulau Seletar (Ridley); Pahang: Kwala Pahang (Ridley 1634). Distrib. Borneo and islands round Singapore. Climbing over trees and bushes in open countries.

4. R. ELONGATA, Lindl. Gen. and Sp. Orch. Pl. p. 218. Stems 6-8 feet tall or more. Leaves elliptic, obtuse coriaceous 3 inches long 1 inch wide, sheaths 1½ inch. Panicle large branches spreading 6-8 inches long. Flowers small numerous. Bracts short ovate. Pedicel and ovary one inch long. Upper sepal linear half inch, laterals large deflexed oblong spathulate. Petals linear obtuse smaller all red. Lip very small, side lobes broad obtuse midlobe oblong obtuse, all red except the white base of midlobe, and tips of lateral lobes. Column broad red. Capsule elliptic 1½ inch long on a pedicel ¼ inch. Reichenb. fil.Xenia. Orch. I. 88. Hook. fil. Fl. Brit. Ind. VI. 48. R. *matutina,* Lindl. Bot. Reg. 1843. t. 41. (not of Gen. and Sp. Orch. Pl.). Pescatorea I. t. 11. *R. micrantha,* Bl. Mus. Bot. I. 60. Rchb. f. l.c. I. 87. *Saccolabium reflexum,* Lindl. Gen. and Sp. 225.

Singapore (Wallich 7309), Bukit Timah Road, Pulau Ubin (Ridley); Johor: Kwala Batu Pahat (Kelsall); Malacca: Jasin (Goodenough 1661); Selangor: Ulu Selangor (Goodenough); Perak (Scortechini); Kwala Kangsar (Stephens); Dindings: Lumut (Ridley 10143); Penang (Curtis). Distrib. Java, Borneo. Rocks by the sea and trees. Native name "Poko Api Api Sesudu."

5. R. MATUTINA, Lindl. Gen. and Sp. Orch. Pl. 218. Stem short 1-2 feet erect. Leaves lorate 7-8 inches long ⅜ inch wide obtuse. Scape 15 inches long, about half floriferous sometimes branched. Bracts ovate ⅛ inch long. Flowers about 20 distant 2 inches across. Upper sepal linear, laterals clawed broader lanceolate acuminate connate at base or free. Petals lanceolate acuminate, all red with darker blotches on the lateral sepals. Lip very small, side lobes rounded tip tongue shaped deflexed, spur conic rather large, white edges of side lobes, midlobe and spur crimson. Column pink short and broad. Anther crimson. Whole flower more or less pubescent. Rchb. fil. Xenia. Orch. I. 90. Pl. 35. (very bad). *A. angustifolia,* Hook. fil. Fl. Brit. Ind. VI. 49. Ic. Pl. 2128. *Aerides matutina,* Bl. Bijdr. 366. Tab. XXIV.

Perak: Bujong Malacca (Ridley 9828) on rocks, Gunong Batu Putih (Wray). Distrib. Java.

46. RENANTHERELLA, Ridl.

Scrambling epiphyte, stems about 2 feet long slender. Leaves linear lanceolate semiterete acuminate. Racemes short, flexuous

Flowers small. Sepals oblanceolate, laterals oblique. Petals narrower linear. Lip side lobes erect, midlobe linear recurved with 2 quadrate calli, a short conic spur. Column slender long arched. Anther conic. Pollinia 2 spathulate caudicle broad, disc oblong. Capsule obconic.

Species one endemic.

R. HISTRIONICA, Ridl. Journ. Linn. Soc. XXXII. 355. Leaves 3 inches long. Racemes 4 inches. Bracts short ovate. Flowers an inch across. Upper sepal oblanceolate erect, laterals deflexed oblique. Petals linear obtuse, all yellow with red spots, midlobe shorter yellow, with white calli. Capsule 1½ inch long. *Renanthera histrionica,* Rchb. fil. Gard. Chron. 1878. p. 74. Hook. fil Fl. Brit. Ind. VI. p. 49.

Singapore: Serangoon (Ridley); Malacca: Mount Ophir (Ridley); Perak: Gunong Keledang (Curtis 3343).

47. TRICHOGLOTTIS, Bl.

Stems rather tall 2-3 feet. Leaves lanceolate lorate coriaceous. Flowers solitary, on short pedicels, small. Sepals and petals spreading similar. Lip shorter side lobes short, base boat shaped or spurred, midlobe entire or 3 lobed, pubescent. Column short thick footless, arms short erect tooth like. Anther ovate beaked. Pollinia 2 caudicle linear disc moderately large.

Species 4 or 5. Malayan and Andamanese, Siam.

Lip midlobe entire	1. *T. retusa.*
Midlobe trifid.	
Base of lip boat shaped	2. *T. scaphigera.*
Base of lip spurred	3. *T. tetraceras.*

1. T. RETUSA, Bl. Bijdr. p. 360. fig. 8. Stem stout 3 feet or more. Leaves thick lorate obtuse bilobed 5 inches long half inch wide, sheaths reticulately ribbed ½ inch long. Flowers ¾ inch across. Pedicel and ovary ½ inch long. Sepals lanceolate acute. Petals narrower, all yellowish marked with pale red. Lip nearly as long, white tinted with pink base boat-shaped side lobes with long recurved points midlobe oblong lanceolate pubescent. Column half the length of the lip, arms erect tooth-like, top dark crimson.

Pahang: Kota Glanggi (Ridley 2358); Selangor: Kwala Lumpur Caves (Kelsall). Distrib. Siam, Cochin China, Borneo, Java.

2. T. SCAPHIGERA, Ridl. Journ. Linn. Soc. XXXII. 357. Stem 2 feet long, weak. Leaves lanceolate acute very shortly subpetiolate, 3 inches long ½ inch or less wide sheaths ½ inch long. Flowers ½ inch across. Bracts ovate. Pedicel and ovary ½ inch long. Sepals oblanceolate obtuse pubescent. Petals similar yellow with red blotches. Lip shorter base boat shaped, side lobes short blunt, with a hairy

callus at the base, midlobe trifid, side lobes linear median one shorter rounded, a large pubescent callus in the centre. Column short, arms long hairy. Anther ovate pubescent.

Penang: Government Hill (Curtis 1964); Perak (Scortechini); Waterloo (Curtis).

3. T. TETRACERAS, Ridl. l.c.c. Stem over a foot long weak. Leaves 3 inches long half inch wide lanceolate acuminate, subpetiolate, sheathed ½ inch long. Flower ½ inch across, pedicel ⅓ inch long. Sepals oblong ovate. Petals smaller ligulate. Lip flat, side lobes tooth like, spur acuminate obtuse, midlobe lanceolate ovate obtuse with two short and two much longer; two keels running from the two lobes to the terminal portion ending in a pubescent callus, a fleshy elongate linear truncate callus in the mouth of the spur. Column short arms tooth like.

Lankawi: Goa Chirita (Curtis 2817).

48. RHYNCHOSTYLIS, Bl.

Epiphytes stem short. Leaves lorate bilobed coriaceous. Racemes short and stout, many flowered. Flowers small. Sepals and petals subequal spreading. Lip adnate to column base, spurred, side lobes 0, midlobe clawed. Column short stout footless. Anther flat, beaked. Pollinia 2 semiovate, caudicle linear disc ovate. Rostellum bifid.

Sepals 2, Indian and Malayan.

1. R. GIGANTEA, Ridl. Journ. Linn. Soc. XXXII. 356. Stem short and stout. Leaves broad lorate obtusely bilobed 12 inches long 2-3 inches wide very thick. Racemes 9-12 inches long very dense flowered. Flowers an inch across, white or spotted with pink, and lip violet pink. Bracts boat shaped ¼ inch long. Upper sepal ovate obtuse base narrowed, laterals longer. Petals oblanceolate obtuse. Lip longer pandurate retuse with a blunt tooth in the notch and a conic process beneath, spur straight ⅝ inch long flattened. Column short. Anther long beaked. Capsule 1½ inch long. *Saccolabium giganteum*, Lindl. Gen. and Sp. Orch. Pl. p. 221. Bot. Mag. t. 5635. Williams Orch. Album II. t. 56.

Singapore: Seletar (Ridley); Pulau Aor, East Coast of Johor (Native collector). Distrib. Cochin China, Siam. Only once obtained in the Peninsula.

2. R. RETUSA, Bl. Bijdr. 286. t. 49. Stem short. Leaves elongate lorate obliquely retuse apices acute, 10-20 inches long ¾-2 inches wide sheaths short. Racemes 4 to 20 inches long dense. Flowers ½-⅝ inch across white blotched with rosy purple. Sepals orbicular ovate. Upper one oblong. Petals elliptic obtuse. Lip rosy purple, limb cuneiform entire or emarginate, spur compressed blunt, pubescent within. Capsule 1-1½ inch long clavate. Hook. fil. Fl. Brit. Ind.

VI. 32. *R. praemorsa,* Bl. l.c. *R. guttata,* Rchb. f. Bonplandia II. 93. *R. Garwailca,* Rchb. f. Walp. Ann. VI. 888. *Saccolabium guttatum,* Lindl. Gen. and Sp. Orch. Pl. 220. Journ. Linn. Soc. III. 32. Bot. Mag. t. 4108. Wight Ic. t. 1745-6. De Vriese Orch. t. 14. Griff. Ic. Pl. As. t. 819. *S. praemorsum,* Lindl. l.c. 221. *S. Rheedii,* Wight Ic. Pl. V. 19. *S. retusum,* Flor. de Serres XIV. 191. t. 1463-4. *S. Blumei,* Lindl. Sert. Orch. t. 47. Bot. Reg. 1841. Misc. 55. Ill. Hort. t. 545. Williams Orchid Album t. 169 t. 238. *S. Garwalicum,* Lindl. Journ. Linn. Soc. III. 32. Gard. Chron. 1879. 102. *S. littorale* Rchb. fil. Gard. Chron. 1881. II. 198. *Sarcanthus guttatus,* Lindl. Bot. Reg. t. 14443. *Aerides guttatum,* Roxb. Fl. Ind. III. 471. *Ae. spicatum,* Don. Prodr. 31. *Ae. proemorsum,* Willd. l.c. *Limodorum retusum,* Sw. Nov. Act. Upsal VI. 80. *Epidendrum retusum,* L. Sp. Pl. 1351.

Lankawi (Curtis). Distrib. India, Ceylon, Java.

49. Saccolabium, Bl.

Epiphytes stems short rarely long. Leaves lorate or oblong coriaceous or terete. Racemes or panicles lateral erect or pendulous. Flowers small. Sepals or petals free or adnate to the column base, subequal. Lip sessile at the column base, side lobes short or almost absent, midlobe small. Spur saccate or conic cylindric, with usually a callus on the back in the mouth, and frequently a ridge more or less developed on the lower face, sometimes meeting the opposite wall and dividing the spur into two. Column short footless, arms very short or wanting. Anther ovate usually beaked, pollinia 2 more or less split, caudicle narrow linear, or broad, disc small or large various.

Species about 200 African, Indian and Malayan, Chinese.

I am quite unable to keep up the genera *Cleisostoma and Sarcanthus* based on the development of the calli in the spur, closely allied plants after differing in this point so much as to belong to these different genera. The Calceolare section of *Saccolabium,* with a saccate spur, the side lobes quite indistinguishable and forming the complete edge of the sac, and entire absence of any callus, makes a much more distinct genus. *Acampe* incorporated in the Flora of British India with *Saccolabium* as far as the typical species go differs in the lip possessing no real spur at all, and I keep it distinct.

§ 1. Uniflora.

Flowers solitary small or in pairs.

Lip midlobe linear bifid	1. *S. tenuicaule.*
Midlobe lanceolate entire	2. *S. miserum.*
Midlobe 5 lobes	3. *S. Pantlingi.*
Midlobe oblong spathulate	4. *S. cornigerum.*

§ 2. Teretifolia.

Flowers racemose or panicled.

Leaves terete long.

Spur short conic not septate	5. *S. halophilum.*
Spur conic nearly septate.	
Midlobe triangular obtuse	6. *S. Machadonis.*
Midlobe ovate acute	7. *S. Kunstleri.*
Spur dilated at base not septate ..	8. *S. sacculatum.*
Leaves terete short, flowers minute	9. *S. perpusillum.*

Leaves lorate or lanceolate.

§ 3. Calceolaria. Spur large basin-shaped side lobes absent, no calli.

Terminal lobe of lip flat denticulate ..	10. *S. bigibbum.*
Terminal lobe of lip flat entire	11. *S. gatinatum.*
Lip entire boat-shaped, acute	12. *S. minimiflorum.*
Lip boat-shaped, terminal lobe narrow bifid	13. *S. rugosulum.*

§ 4. Cleisostoma. Spur short broad rounded. Flowers yellow with red spots. A flat callus in the mouth of the spur.

Stem tall climbing. Panicle wide ..	14. *S. latifolium.*
Stem short and thick panicle lax, callus saddle shaped with 2 legs	15. *S. suffusum.*
Stem callus quadrate entire	16. *S. validum.*
Stem short flowers racemose or shortly panicled.	
Callus in spur bifid. Scape tall erect	17. *S. hortense.*
Callus in spur bifid. Scape very short	18. *S. parvum.*
Callus entire semicircular	19. *S. uteriferum.*

§ 5. Sarcanthus. Spur horn-shaped, midlobe of lip moderately large. Callus entire or lobed on the back of the spur with a ridge more or less developed in front making the spur nearly septate. Flowers greenish with longitudinal red bars, lip white or violet.

Stem very tall climbing	20. *S. Scortechinii.*
Stem stout leaves broad	21. *S. densiflorum.*

Stem short or slender, racemes short or slender.

Leaves flat point terete subulate .. .. 22. *S. secundum.*

Leaves flat blunt.

Midlobe ovate. Spur completely septate 23. *S. pensile.*

Midlobe ovate notched on each side. Spur not septate .. .. .. 24. *S. fissicors.*

Midlobe reniform. Spur with 2 pubescent keels .. .. 25. *S. bicarinatum.*

§ 6. Eu-Saccolabium. Spur small or moderate.

Midlobe larger than side lobes.

Spur short side lobes small acute .. 26. *S. fissum.*

Spur long curved side lobes long rounded 27. *S. secundiflorum.*

Spur long side lobes rounded midlobe long narrow .. .. 28. *S. miniatum.*

Spur long side lobes indistinct, midlobe horn like .. .. 29. *S. undulatum.*

Spur long midlobe smaller than side lobes.

Scape tall panicled.

Flowers very small $\frac{1}{4}$ inch across .. .. 30. *S. ionosmum.*

Flowers $\frac{1}{2}$ inch across .. .. .. 31. *S. Arachnanthe.*

Scape racemose.

Flowers very small, spur large curved .. 32. *S. penangianum.*

Flowers moderate spur long nearly straight 33. *S. saxicolum.*

Spur long clubbed, side lobes large spreading .. .. 34. *S. Angraecum.*

Flowers minute racemes thickened dense .. 35. *S. Myosurus.*

§ 1. Uniflorum.

1. S. tenuicaule, Hook. fil. Fl. Brit. Ind. VI. 360. Stems slender 1 foot long. Leaves narrow linear acute 3 inches long $\frac{3}{16}$ inch wide sheaths $\frac{1}{4}$ inch long flexuous. Flowers small $\frac{1}{8}$ inch long 2-3 on a tubercle with small ovate bracts. Pedicel and ovary very short. Upper sepal lanceolate subacute, laterals ovate acute oblique. Petals ovate acute smaller all yellow or white. Lip side lobes oblong acute, midlobe much longer, linear apex bifid, spur short curved thick blunt constricted above the swollen end. Column rather large curved. Rostellum short. Anther ovate with a long blunt beak. Pollinia crescent shaped, caudicle linear dilated into 2 arms above. Hook. fil. Ann. Bot. Roy. Gard. Calc. V. 49. T. 74.

Selangor: Kwala Lumpur Caves (Ridley 8133); Perak (Scortechini 512), (Wray); Penang: Government Hill (Curtis 994. 2307), (Ridley 7241).

2. S. MISERUM, Ridl. Journ. Linn. Soc. XXXII. 359. Stems over a foot long, stout $\frac{1}{8}$ inch thick. Leaves linear 5 inches long $\frac{1}{4}$ inch wide, sheaths $\frac{1}{2}$ inch long. Racemes very short 3-4 flowered. Flowers very small yellow. Sepals elliptic ovate to ovate laterals a little broader than the upper one. Petals smaller lanceolate oblong. Lip side lobes oblong quadrate midlobe ovate obtuse with a minute callus at the base, spur short conic incurved blunt. Column short and thick arms short oval. Capsule elliptic $\frac{1}{2}$ inch long shortly pedicelled.

Penang: Government Hill (Curtis 2184); Lankawi (Curtis); Dindings: Gunong Tungul (Ridley 8396). By a misprint in the original description the stem was given 1 inch thick.

3. S. PANTLINGI, n.sp. Stems slender pendulous 12 inches long. Leaves thickly coriaceous $\frac{1}{2}$ inch apart linear oblong apices acute not notched. Flowers solitary $\frac{1}{2}$ inch across on a slender pedicel. Sepals and petals fleshy subequal orange barred purple brown oblong lanceolate blunt, laterals slightly falcate. Lip fleshy pale yellow narrowly oblong tapering to the acute emarginate apex 5 lobed, lowest pair near the base small and tooth like blunt, pair at the base of the terminal lobe larger conical pointed outwards, disc between them pubescent, spur $\frac{1}{3}$ length of the stalked ovary horizontal cylindric tapering to apex. Column short with a linear callus on its anterior surface curved upwards and hairy. Anther broad. Pollinia 4 in two pairs each pair globose and attached to a narrow caudicle, disc oblong half as long as the caudicle upper end truncate. *Cleisostoma tenuicaule,* King. Journ. As. Soc. Beng. LXVI. part II. p. 596.

Perak (Kunstler). I have not seen this, but from its description it appears to be allied rather to *Trichoglottis.*

4. S. CORNIGERUM, Ridl. l.c. 361. Stem long flexuous. Leaves lanceolate acute $3\frac{1}{2}$ inch long, $\frac{1}{2}$ inch wide, sheaths $\frac{3}{8}$ inch long raceme very short 2-3 flowered. Bracts very short ovate obtuse. Ovary and pedicel $\frac{1}{2}$ inch long. Sepals oblong spathulate $\frac{3}{8}$ inch long. Petals broader brownish yellow. Lip a litle shorter yellowish white, side lobes erect horn like midlobe oblong spathulate obtuse, spur straight conic $\frac{1}{4}$ inch long. Column short thick, arms rounded.

Penang: West Hill (Curtis).

§ 2. TERETIFOLIA.

5. S. HALOPHILUM, Ridl. Journ. Linn. Soc. XXXII. 367. Tufted plant, stems 3-12 inches slender curved. Leaves terete hardly

$\frac{1}{8}$ inch through pungent recurved, sheaths $\frac{1}{4}$ inch long, pedicel and ovary $\frac{1}{4}$ inch long. Sepals oblong obtuse. Petals smaller, all pale olive tinted with pink. Lip side lobes ovate obtuse rosy violet, midlobe white much longer hastate blunt, spur horizontal not septate, callus obtriangular white. Anther obovate beaked, pollinia globose, caudicle linear disc broad hastate. Column tall. Capsule $\frac{3}{8}$ inch long oblong.

Singapore: Pulau Tekong, Sungei Morai (Ridley); Johor: Tanah Runto (Ridley). Distrib. Sumatra, Rhio, Borneo. Common on trees on the sea shores.

6. S. Machadonis, Ridley Journ. Roy. As. Soc. S. Br. Vol. XXXIX. p. 82. Stems curved 12 inches long. Leaves terete recurved 3 inches long $\frac{1}{8}$ inch thick apex pungent. Racemes 2 inches long. Flowers scattered $\frac{3}{8}$ inch long. Sepals linear oblong obtuse. Petals narrower all recurved olive yellow. Lip pale violet, side lobes erect oblong truncate, midlobe much longer flat hastate triangular acuminate obtuse, spur short curved blunt olive yellow. Upper callus in mouth rounded hemispheric, with an anchor shaped process on the top, lower edge of callus truncate pubescent lower callus conic ending in a lamina running to the back of the spur. Column stout sigmoid olive yellow. Anther 1 celled flattened hemispheric. Pollinia subglobose on a broad elongate caudicle tapering upwards to the point and fixed to a saddle shaped disc. Rostellum lobes broad deflexed parallel oblong.

Johor: Batu Pahat (Ridley).

7. S. Kunstleri, Ridl. Stem 4-6 inches long often branching. Leaves terete fleshy stout, $2\frac{1}{2}$-3 inches long and $\frac{1}{4}$ inch thick. Inflorescence more than twice as long as the leaves racemose or panicled. Flowers numerous $\frac{1}{4}$ inch across. Bracts ovate acuminate. Sepals subequal elliptic obtuse. Petals smaller oblong, white, pink midline. Lip lateral lobes erect broadly oblong subfalcate, midlobe ovate acute concave, pink septum imperfect almost catching a large callus on the back wall. Column stout papillose with a short thick foot and a small rounded callus on each side of the anther. Anther truncate in front. *Sarcanthus Kunstleri,* King. Journ. As. Soc. Beng. LXVI. p. 594.

Perak (Kunstler). Drawing in Herb. Calc. Leaves remarkably thick.

8. S. sacculatum, Ridl. Stem slender 8 inches long. Leaves terete obtuse, 6 inches long $\frac{1}{10}$ inch thick, sheaths 1 inch long ribbed and reticulate. Racemes slender 3 inches long. Flowers very small scattered. Bracts minute ovate. Pedicels $\frac{1}{8}$ inch long. Sepals ovate subacute. Petals smaller lorate. Lip shortly clawed, side lobes ovate, midlobe linear lanceolate hastate, spur rather large saccate pinched in at the upper part dilated below, not septate, callus clubbed bilobed,

Column long. Anther ovate not beaked. Capsule sausage shaped, triquetrous ¾ inch long. *Sarcanthus saccolatus,* Ridl. Journ. Linn. Soc. XXXII. 368.

Lankawi Islands (Curtis 2560), (Ridley 8333).

9. S. PERPUSILLUM, Hook. fil. Fl. Brit. Ind. VI. 56. Ic. Pl. 2129A. A tufted little plant, stems 2-4 inches long. Leaves nearly terete recurved acute 1-1¼ inch long. Racemes about an inch long, covered with minute white pubescent flowers, yellow when withering. Bracts minute lanceolate acute, as long as the pedicels. Sepals and petals ovate oblong. Lip side lobes rounded midlobe ovate fleshy spur curved clubbed. Column short. Anther with a long upcurved beak. Pollinia with a linear caudicle and a much longer linear gland. Arms of column short erect. Rostellum very long narrow deeply bifid. Capsule ⅛ inch long elliptic. Ridley Journ. Linn. Soc. XXXII. 358.

Singapore: Sungei Buluh (Ridley 374), Jurong (Ridley 4680); Malacca: Sungei Kesang (Derry), Sungei Rambei (Derry 307); Perak: Taiping (Curtis).

§ 3. CALCEOLARIA.

10. S. BIGIBBUM, Hook. fil. Bot. Mag. 5767. Stem very short, leaves linear oblong or linear falcate acuminate narrow at the base, 3-6 inches long ⅜ inch wide, or broader. Raceme short half an inch long. Flowers crowded at the apex, small. Sepals and petals spathulate obtuse yellow. Lip saccate, terminal lobes reniform denticulate ciliate white, with a yellow red dotted raised mass in the centre. Column short and thick, arms broad incurved. Anther large conic. Rostellum deeply bifid. Capsule oblong thick half an inch long. Fl. Brit. Ind. VI.

Pahang: Kluang Terbang (Barnes); Perak: Larut Hills (Scortechini), (Ridley). Distrib. Rangoon. The leaves in the original figure are much broader than those of the Peninsula plants.

11. S. CATINATUM, Ridley Journ. As. Soc. Str. Br. Vol. XXXIX. p. 84. Stem hardly 1 inch long. Leaves 2-3 very coriaceous oblong obtuse broadly bilobed 7 inches long, 2 inches wide. Raceme very short rachis stout. Flowers about 6, ¾ inch across. Sepals obovate spathulate blunt. Petals narower yellowish with red spots. Lip saccate rounded, side lobes not distinct, terminal lobe ovate triangular entire glabrous blunt all white with violet spots. Column very short and broad at base pink, no arms. Anther obtuse conic in front triangular bifid. Pollinia oblong globose half-split, caudicle linear, disc oblong hastate. Rostellum bifid. Capsule elliptic narrowed at base 2 inches long.

Pahang: Kota Glanggi (Ridley). Distrib. Borneo. This is probably the plant mentioned in the Flora of British India as *S. calceolare* collected in Perak by Carter.

12. S. MINIMIFLORUM, Hook. fil. Fl. Brit. Ind. VI. 59. Ic. Pl. 2133. Stem $\frac{1}{4}$-$\frac{1}{2}$ inch long. Leaves 4-7 oblong lanceolate oblique narrowed at base 2 inches long $\frac{5}{8}$ wide, blunt. Racemes slender 4 inches long. Flowers numerous minute. Bracts lanceolate acuminate $\frac{1}{16}$ inch long. Sepals narrow lanceolate acuminate red. Petals broader obtuse. Lip saccate hardly spurred, entire acuminate yellow, upcurved a globose tubercle at the mouth (fide Hooker). Anther beaked. Rostellum large, bifid lobes semiovate acuminate. Capsule elliptic. *S. cortinatum,* Ridl. Journ. Bot. 1898 215.

Selangor: Kwala Lumpur Caves (Ridley); Perak (Scortechini)

13. S. RUGOSULUM, Ridley Journ. Roy. As. Soc. S. Br. Vol. XXXIX. p. 82. Stem stout 6 inches tall. Leaves linear narrowed at the base, apex bilobed mucronate, 5 inches long $\frac{1}{2}$ inch wide sheaths $\frac{1}{2}$ inch long deeply transversely wrinkled. Racemes short $\frac{1}{2}$ inch long stout, with a few cup shaped sheaths at the base. Flowers $\frac{1}{4}$ inch across on pedicels $\frac{1}{8}$ inch long, yellow spotted with red. Sepals ovate coriaceous. Petals thinner pallid. Lip, boat shaped side lobes very short oblong midlobe large fleshy ovate grooved ending in a slender horn bifid at the tip, spur very short conic blunt. Column large arms rounded.

Kedah: Gunong Jerai (Ridley).

§ 4. CLEISOSTOMA.

14. S. LATIFOLIUM, Ridl. Stem tall straggling stout. Leaves oblong obtuse bilobed nearly equally, 4 inches long $1\frac{1}{2}$ inch wide sheaths long. Panicles long spotted purple much branched. Flowers numerous nearly half an inch across. Bracts minute ovate. Ovary and pedicel $\frac{3}{8}$ inch long. Sepals oblong blunt. Petals broader subspathulate, all lemon yellow, backs spotted red. Lip side lobes oblong quadrate midlobe short ovate acute recurved, all yellow sometimes dotted red, spur large scrotiform retuse, walls very thick, lamina oblong apex notched. Column very short rounded. Anther broad ovate beaked. Pollinia globose, caudicle very broad linear, disc large oblong. Capsule cylindric an inch long. *Cleisostoma latifolium,* Lindl. Bot. Reg. 1840. Misc. 60. Walp. Ann. VI. 889. Hook. fil. Fl. Brit. Ind. VI. 71. *C. fuscum,* Lindl. Journ. Hort. Soc. 1850. 80.

Singapore (Loddiges); Malacca (Griffith, Maingay); Brisu (Goodenough 1410); Pahang: Temerloh (Ridley 2350); Selangor: Kwala Lumpur Caves (Kelsall); Perak (Wray, Scortechini). Distrib. Sumatra.

15. S. SUFFUSUM, Ridley Journ. Roy. As. Soc. Str. Br. Vol. XXXXIV. p. 189. Stem stout 6 inches long ½ inch through. Leaves fleshy light green 6 inches long 1 inch across lorate obtuse unequally bilobed rounded. Panicled lax few-branched 18 inches long branches 3 or 4. Flowers numerous ¼ inch long to the tip of the spur, pedicel ⅛ inch long. Sepals lanceolate acute yellow suffused with brown. Petals narrower linear. Lip fleshy porrect spur cylindric horizontal obtuse, side lobes short oblong obtuse midlobe hastate tongue-shaped fleshy obtuse with an erect tooth towards the tip, callus in the spur-mouth, thick large decurved fleshy with two crura from the back attaching it to the back wall of the spur, no septum. Column short and broad. Pollinia globose, pedicel oblong linear disc, ovate acute.

Perak: Kamunting, Sungei Siput (Machado). Endemic. A curious plant with a straight horizontal spur and a very curious callus.

16. S. VALIDUM, n.sp. A stout plant with copious thick corky roots, stem 4 inches long ½ inch thick. Leaves coriaceous lorate 6 inches long ¾ inch through unequally bilobed. Panicles from the lower axils 9 inches long, slender, peduncle 3 inches branches two. Flowers numerous but remote. Bracts ovate acute small. Pedicels ¼ inch long. Sepals lanceolate subacute. Petals much smaller dull yellow, with reddish purple blotching in the centre. Lip shorter spur nearly as long as the ovary horizontal blunt cylindric, side lobes short oblong rhomboid blunt, midlobe longer short ovate fleshy; callus in mouth of spur fleshy quadrate large decurved, no septum or callus in spur. Column short. Anther 4 celled ovate. Pollinia transversely bilobed pedicel oblong linear, disc oblong truncate. Column wings short incurved. Rostellum arms oblong truncate with a minute process on the upper edge.

Perak: Kamunting (Machado July 10th).

17. S. HORTENSE, Ridl. Journ. Roy. As. Soc. Str. Br. Vol. XXXIX. p. 83. Stem stout 1-2 inches long. Leaves lorate coriaceous blunt unequally bilobed 4-6 inches long ¾-1 inch wide. Scapes erect taller than the leaves, base nude apex racemose or more usually with a few branches. Bracts small ovate. Flowers ¼ inch across. Sepals oblong obtuse, laterals broader. Petals narrower yellow with red edges. Lip yellow side lobes small erect with two subacute points, midlobe broader ovate acute, spur scrotiform very broad red, callus in mouth of tube a thin lamina bifid at apex. Column short and broad. Anther broad abruptly truncate beaked. Pollinia elliptic, caudicle linear very narrow, disc ovoid. Rostellum entire. Capsule elliptic oblong an inch long.

Singapore: Jurong (Ridley); Johor: Tana Runto (Ridley); Malacca: Sungei Rambai (Derry); Perak (Scortechini drawing 53); Penang: Tanjong Bunga (Curtis 1834). Distrib. Borneo.

18. S. PARVUM, Ridl. Stem shortly an inch long with long grey roots. Leaves lanceolate rather thin acute, 1½ inch long nearly ¼ inch across. Raceme very short ¼ inch long, few flowered. Bracts small ovate remote. Flowers ⅛ inch long fleshy. Upper sepal lanceolate, laterals larger ovate. Petals lorate as long. Lip side lobes quadrate, median widely ovate, spur oblong saccate thick, callus lorate bifid. Anther ovate. Rostellum linear. *Cleisostoma parvum,* Ridl. Journ. Linn. Soc. XXXII. 366.

Pahang: Kota Glanggi (Ridley).

19. S. UTERIFERUM, Ridl. Stemless leaves lorate apex broad rounded or retuse margins undulate, 7 inches long by one inch wide. Spike shorter than the leaves densely flowered peduncle stout, 3 inches long. Bracts minute. Flowers ¼ inch across. Sepals obovate oblong yellow dull red at base. Petals similar, smaller. Lip side lobes truncate, midlobe very small fleshy, spur a large inflated subglobose sac contracted above, callus semicircular convex entire. Column very short. Anther broad. Pollinia globose, caudicle broad, gland oblong. *Cleisostoma uteriferum,* Hook. fil. Fl. Brit. Ind. VI. 74. Ann. Roy. Bot. Gard. Calc. V. 56. Pl. 84.

Perak (Kunstler).

§ 5. SARCANTHUS.

20. S. SCORTECHINII, Ridl. A tall plant climbing with the habit of a *Renanthera* about six feet tall ¼ inch through. Leaves lanceolate subacute or obtuse 5 inches long one inch wide petiolate sheaths an inch long. Raceme stout deflexed eventually 15 inches long. Flowers numerous opening few at a time, ovary terete grooved nearly sessile, $\frac{3}{16}$ inch long. Flowers ½ inch across. Bracts ovate triangular. Upper sepal oblong, laterals obovate obtuse. Petals narrower, all dark purple with a pale yellowish central bar on the sepals. Lip side lobes very low sinuous, hardly distinguished midlobe broader triangular hastate blunt violet tip white, spur nearly straight conic, shorter than the ovary white, callus in the mouth of the spur clubbed, septum thin almost complete. Column stout white arms obscure. Anther ovate abruptly beaked. Pollinia very small, partly split at back, caudicle very slender disc minute. Capsule oblong, thick ¾ inch long. *Sarcanthus Scortechinii,* Hook. fil. Fl. Brit. Ind. VI. 68. Ic. Pl. 2138.

Pahang: Tahan River (Ridley 2347), Kota Glanggi (2357); Perak (Scortechini); Penang (Curtis 3210).

21. S. DENSIFLORUM, Lindl. Gen. and Sp. Orch. Pl. 220. Stem a foot long very stout. Leaves oblong or linear oblong obtuse very unequally bilobed 6 inches long 2 inches wide sheaths an inch long, spike decurved sometimes branched 4-8 inches long, rachis very stout

pubescent. Bracts ½ inch long lanceolate acuminate. Flowers ½ inch across, pedicel and ovary ¼ inch long. Sepals ovate lanceolate obtuse, yellowish with two red bands or thickly dotted with red. Petals smaller lanceolate. Lip side lobes oblong obtuse, midlobe lanceolate subobtuse yellow tinted red, spur ¼ inch long dilated at the apex and bilobed, callus thin forked septum more or less developed. Column short arms thick. Anther beaked. Caudicle of pollinia slightly dilated upwards, disc minute. Bot. Reg. 1838. Misc. 56. *Sarcanthus densiflorus,* Par. and Rchb. fil. Trans. Linn. Soc. XXX. 136. *S. castaneus,* Ridl. Trans. Linn. Soc. XXXII. 369. *Cleisostoma spicatum,* Lindl. Bot. Reg. 1847. under t. 32. Hook. fil. Ann. Roy. Bot. Gard. Calc. Vol. V. p. 55. Pl. 83. King. l.c.c. Vol. 8. Pl. 311.

Singapore: Dalvey Road (Ridley); Selangor: Rawang (Ridley); Perak (Scortechini); Penang (Wallich 7311), West Hill (Curtis 995). Distrib. Tenasserim, Borneo.

22. S. SECUNDUM, Ridl. A large plant about a foot or more tall, stem stout more than ⅛ inch through. Leaves thickly coriaceous linear acuminate apex terete pungent, over a foot long ½ inch wide, sheaths an inch long. Raceme dense pendulous 2-4 inches long base nude. Bracts ovate very short. Flowers about ¼ inch long, ovary and pedicel very short. Sepals oblong obovate obtuse. Petals narrower green with two red bands. Lip side lobes erect oblong ending in terete points, midlobe ovate fleshy, white tinted violet and yellow, spur horn shaped white, a keel runs from near the apex of the midlobe down the spur dividing it, callus in mouth of spur short clubbed. Column stout arms rounded incurved. Anther flat quadrate with a narrow acute beak. Pollinia globose, caudicle linear disc ovate small. Capsule cylindric ¾ inch long ¼ inch through. *Sarcanthus secundus,* Griff. Notul. III. 362. Ic. Pl. As. t. 336. Hook. fil. Fl. Brit. Ind. VI. 67. Ann. Roy. Bot. Calc. 5. p. 51. Pl. 77. (not Vol. 8. Pl. 321).

Johor: Batu Pahat (native); Malacca: Sungei Kesang (Derry); Sungei Rambei (Ridley); Perak: Larut Hills (Hervey); Lankawi (Curtis). Distrib. India, Assam, Cochin China, Sumatra, Borneo. Native name "Sakat Ular."

23. S. PENSILE, Ridl. Stem 3 inches long thick. Leaves lorate obtusely bilobed, 6 inches long 1 inch wide. Raceme long slender lower half nude. Flowers scattered ½ inch wide. Bracts small ovate. Pedicels ½ inch long. Sepals oblong ovate. Petals smaller oblanceolate obtuse all greenish tinted with red. Lip pink side lobes erect horn shaped, midlobe short ovate obtuse callus thick blunt, septum complete. Column ovate beaked, pollinia ovoid half divided, caudicle linear disc small. *Sarcanthus pensilis,* Ridl. Journ. Linn. Soc. XXXII. 369.

Johor: Batu Pahat (Ridley).

24. S. FISSICORS, n.sp. Stem 4 or 5 inches long. Leaves linear oblong rounded emarginate at the tip 4 to 5 inches long 1 inch across, rather thickly coriaceous. Inflorescence 10 inches long very slender, peduncle 6 inches long purple. Bracts very small ovate. Flowers rather distinct small, rachis faintly black scurfy simply racemose or with one side branch. Pedicel and ovary $\frac{1}{5}$ inch long bright yellow green. Sepals ovate oblong $\frac{1}{10}$ inch long blunt dark red brown. Petals narrower linear similarly coloured. Lip side lobes small erect truncate yellowish midlobe cordate acute, notched on either side, violet with white centre and edge; spur parallel to the pedicel or deflexed and nearly as long cylindric slightly flattened white, callus an oblong truncate fleshy decurved lamina in the mouth, no septum. Column rather tall violet, wings obscure. Anther white skull shaped truncate emarginate in front. Pollinia flattened subglobose orbicular bilobed, pedicel flat narrowed above and below and slightly dilate in the middle, disc very small oblong. Rostellum lobes short, oblong truncate with deflexed points, stigma cordate.

Perak: Kamunting (Machado). Flowered in H. B. Singapore 1906 December. This species has the habit of *S. pensile,* but the flowers more resemble those of *S. Scortechinii.*

25. S. BICARINATUM, Ridl. Stem 6 inches long $\frac{3}{16}$ inch thick. Leaves lorate bilobed, flaccid, 7 inches long $\frac{3}{4}$ inch wide. Panicle of few branches 6 inches long. Flowers about 20, $\frac{1}{4}$ inch across. Pedicels $\frac{1}{4}$ inch long. Bracts minute ovate. Sepals oblong ovate blunt, deep red with a median line and tip green. Petals linear. Lip white side lobes short obtuse, median reniform hastate, spur horn shaped curved blunt $\frac{1}{8}$ inch long, keels in the spur two pubescent upper one and lower one nearly meeting. Column short red arms short erect. Anther yellow. Pollinia oblong, caudicle short and broad, disc oblong with two very low curved arms. Rostellum long deeply bifid. *Sarcanthus rostellatus,* Ridl. Journ. Bot. 1900 73.

Perak: Tambun near Ipoh (Ridley).

§ 6. EU-SACCOLABIUM.

26. S. FISSUM, Ridl. Journ. Linn. Soc. XXXII. 361. Stems stout short. Leaves lorate stiffly coriaceous deeply bifid acute, 4 inches long inch wide, sheaths wide $\frac{1}{4}$ inch long. Raceme 3 inches long, base nude, rachis thickened. Flowers $\frac{1}{4}$ inch across, fleshy, pedicel white. Lip side lobes short blunt, midlobe oblong ovate obtuse, white, side lobes and centre of midlobe violet, a hemispheric white callus at the base, spur short blunt thick half as long as the ovary. Column very short, arms rounded incurved. Anther yellow with a violet median line, beaked, caudicle of pollinia spathulate the apex widely triangular, disc ovate.

Lankawi Islands (Curtis).

27. S. SECUNDIFLORUM, Ridl. Journ. Bot. 1898. p. 210. Stem about an inch or little more tall stout. Leaves lorate coriaceous 1½ inches long ¼ inch wide blunt sheaths short, deep green tinted with purple. Raceme 2 inches long. Flowers about 6 small secund. Upper sepal lanceolate acute, laterals obtuse white. Petals linear oblong white tipped violet. Lip base saccate, side lobes oblong, yellowish white, midlobe obcuneate apex thickened, truncate with an erect point white, spur nearly as long as the ovary thick curved clubbed, yellowish. Column short and thick green, arms linear erect. Anther with a long linear bifid upcurved beak. Pollinia globose on a linear caudicle with a much longer linear disc.

Singapore: Chua Chu Kang (Ridley). Distrib. Sinkep.

28. S. MINIATUM, Lindl. Bot. Reg. 1847. t. 58. Stem stout woody 3-4 inches long, roots very stout. Leaves linear obtuse very coriaceous 4 inches long, ½ inch wide recurved, sheaths ribbed ¼ inch long. Racemes suberect 3-4 inches long. Flowers densely crowded nearly ½ inch long to end of spur, red or orange yellow (var. *citrinum*). Sepals obovate. Petals nearly as long and broad. Lip side lobes rounded short midlobe long and narrow oblong acute, spur long subterete slightly curved. Column stout arms very short rounded yellow. Anther dark red ovate beaked. Pollinia globose pedicel linear broad, disc quadrate much smaller.

var. *citrinum*, Rchb. fil. Gard. Chron. Ap. 26. 1884. p. 542.

Lankawi Islands (Curtis). Distrib. Siam.. Distrib. type Java, variety in Philippines.

29. S. UNDULATUM, Ridl. Journ. Bot. 1900. 72. Stems flattened 6 inches long. Leaves lorate undulate flaccid, 5 inches long ¾ inch wide. Racemes slender pendulous 4 inches long densely covered with very small flowers. Bracts minute ovate acuminate half as long as the pedicels. Sepals oblong ovate $\frac{1}{16}$ inch long yellowish with two red bands. Petals linear lorate obtuse narrower yellow with four red spots. Lip side lobes hardly distinct midlobe short, horn like decurved, spur as long as the pedicel blunt subcylindric, yellow with 2 red spots in the mouth. Column short. Pollinia subglobose, caudicle broadly dilated triangular at apex base linear, disc oblong. Capsule oblong pear-shaped.

Perak: at Telok Pinang near Ipoh (Ridley).

30. S. IONOSMUM, Ridl. Stem 6 inches long. Leaves lorate apex bilobed obtuse 6 inches long ¾ inch wide, sheaths ¼ inch long. Panicles several 8 inches long much branched peduncle about 3 inches, branches 2 inches slender. Bracts ovate acute. Flowers very numerous fragrant, very small ¼ inch across. Pedicels ¼ inch long. Sepals oblong obtuse. Petals smaller olive yellow with transverse bars of

violet spots. Lip side lobes triangular obtuse violet median ovate short with two conic calli. Spur ⅜ inch long straight blunt pinkish white with a white tongue-shaped callus in the mouth. Column short violet. Anther flat tip bilobed. Pollinia deeply divided, caudicle linear disc small ovate. Rostellum bluntly bifid. *Cleisostoma ionosma,* Ridl. Journ. Linn. Soc. XXXII. 366. (not of Lindley).

Perak: Larut Hills (Ridley).

31. S. ARACHNANTHE, Ridl. Journ. Roy. As. Soc. Str. Br. Vol. XXXIX. p. 83. Stem tall scandent. Leaves oblong obtuse 4 inches long 1½ inch wide, sheaths ½ inch long. Panicle 2½ feet long peduncle long nude except for a few sheaths purple, bracts 3 or 4 across, pedicels longer slender. Bracts small ovate. Sepals and petals spreading spathulate obtuse, lateral sepals falcate, white with purple spots at base. Lip fleshy side lobes indistinct forming a wall round the entrance of the spur, midlobe ovate broad short, spur broad saccate rounded large all white, callus in the mouth oblong notched. Column short and broad, rostellum short. Anther thin depressed, hemispheric. Pollinia 2 globose, caudicle broadly linear disc half as long oblong.

Perak and Kedah (Curtis). This plant has the habit and column of a *Renanthera* with the flowers of a *Cleisostoma.*

32. S. PENANGIANUM, Hook. fil. Brit. Ind. VI. p. 57. Ic. Pl. 2129 B. Stems short, 4-5 inches long tufted. Leaves linear or narrowly linear lanceolate 2½-4 inches long ⅓ inch wide. Racemes 1-1½ inch long. Bracts subulate. Flowers very small ⅙ inch long, crowded yellow or whitish speckled red. Upper sepal obovate oblong, laterals oblique. Petals much smaller. Lip erect side lobes ovate midlobe much smaller ovate rounded, spur large curved swollen at base narrowed to tip. Column arms rounded. Pollinia caudicle spathulate. Hook. fil. Ann. Bot. Gard. Calc. V. 47. Pl. 71.

Perak: Sungkei river (Curtis), (Kunstler); Kedah: Gunong Jerai (Curtis).

33. S. SAXICOLUM, Ridl. Trans. Linn. Soc. III. p. 374. Stem a foot or more long ⅛ inch thick. Leaves linear obtuse, equally bilobed coriaceous, narrowed at the base 3 inches long ⅛ inch wide, sheaths ribbed ¾ inch long. Racemes slender 2-3 inches long, base nude except for some short amplexicaul sheaths, rachis thickened. Bracts small ovate acute, deflexed. Flowers many on pedicels ¼ inch long, half an inch long to end of spur. Sepals oblong ovate obtuse yellow with a red keel. Petals very small oblong acute oblique. Lip side lobes rounded midlobe very small triangular ovate with a tongue shaped callus in the mouth of the spur, spur long nearly straight narrowed to the tip. Column short arms long rounded. Anther long beaked. *S. flaveolum,* Ridl. Journ. Linn. Soc. XXXII. 360.

Pahang: Kota Glanggi (Ridley); Perak: Tambun (Ridley 9830); Kedah: Gunong Jerai (Curtis).

34. S. Angraecum, Ridl. Journ. Bot. 1898. p. 214. Stem an inch long. Leaves coriaceous lanceolate falcate oblique blunt, 2 inches long, $\frac{5}{8}$ inch wide. Raceme short $\frac{3}{4}$ inch long, rachis thickened flattened. Bracts ovate acute very short. Flowers half inch across, white, pedicel $\frac{1}{4}$ inch long. Sepals elliptic acute. Petals narrower. Lip with a short claw, side lobes large obliquely obovate, minutely toothed, midlobe minute cordate, spur nearly half an inch long clubbed. Column short. Pollinia ovoid globose, pedicel narrow, disc shield shaped. Rostellum elongate. Capsule triquetrous $1\frac{1}{2}$ inch long.

Selangor: Kwala Lumpur Caves (Ridley 8131).

35. S. Myosurus, Ridl. Journ. Roy. As. Soc. Str. Br. Vol. XXXIX. p. 84. Stems short 1-2 inches crowded together, with copious roots. Leaves lanceolate falcate subacute 3 inches long, $\frac{1}{4}$ inch wide, sheaths $\frac{1}{4}$ inch long. Scapes slender 3 inches long, scabrid at base, racemes 1 inch long thickened. Bracts ovate, very numerous blunt. Flowers minute. Sepals lanceolate oblong falcate. Petals narrower. Lip side lobes oblong erect, midlobe ovate lanceolate shorter, spur dependent broad blunt as long as ovary. Column short and broad, footless. Capsule cylindric $\frac{1}{2}$ inch long, pedicel $\frac{1}{8}$ inch.

Pahang: Kwala Tembeling (Ridley). A most curious plant with the habit and racemes of a *Dendrocolla,* but the flowers very minute and fleshy of a *Saccolabium.*

50. Microsaccus, Bl. ,

Stems short tufted, covered with distichous ovate equitant leaves. Racemes very short. Flowers 1-2 white. Bracts ovate rather large. Sepals and petals subequal. Lip almost entire fleshy, spur saccate obtuse. Column short arms short blunt. Anther conic, one-celled. Pollinia 4, caudicle narrow disc small. Rostellum rather long entire.

Species one. Burmah and Malaya.

M. javensis, Bl. Bijdr. 367. Stems curved 4-6 inches long. Leaves scalpelliform, obtuse $\frac{1}{4}$ inch long, crowded. Flowers white $\frac{1}{8}$ inch across. Bracts white. Sepals and petals ovate lanceolate acute. Petals a little smaller. Lip side lobes very indistinct midlobe obtuse, a yellow spot at the base, spur stout shorter than the pedicel. Anther small. Pollinia globose, caudicle very narrow linear, disc ovate acute. Hook. fil. Fl. Brit. Ind. VI. 77. Lindl. Gen. and Sp. Orch. Pl. 219. *Saccolabium Griffithii,* Par. and Rchb. fil. Trans. Linn. Soc. XXX. 145.

Singapore: Chan Chu Kang (Ridley); Selangor: Kwala Lumpur Caves (Kelsall); Perak (Scortechini). Distrib. Burmah, Siam, Java.

Excluded Species.

M. virens, Hook. fil. is *Adenoncos virens,* Bl.

51. Taeniophyllum, Bl.

Stems very short roots copious flat, long. Leaves very small or usually none, racemes short slender. Flowers minute. Bracts distichous persistent. Sepals and petals free or conic. Lip entire or three lobed, spurred. Column short, with broad incurved arms. Anther beaked pollinia 4. Rostellum elongate. Capsule large sausage shaped.

Species about 6. India, Malaya, Pacific.

Sepals and petals free	1. *T. serrula.*
Sepals and petals connate	2. *T. rubrum.*

1. T. serrula, Hook. fil. Fl. Brit. Ind. VI. 77. Roots very long, stem exceedingly short, leaves none. Racemes ½-1 inch long, almost entirely floriferous. Bracts acute pubescent. Flowers minute white or yellowish. Sepals narrowly lanceolate obtuse. Petals narrower. Lip boat shaped nearly entire, side lobes rounded, spur scrotiform. Column arms obtuse. Anther large with two purple spots, beak truncate. Pollinia 4 globose, caudicle linear. Capsule an inch long sausage shaped. Ridl. Journ. Linn. Soc. XXXII. 363.

Singapore: Tanglin, Chan Chu Kang, etc., (Ridley); Johor: Kota Tinggi (Ridley); Pahang: Pekan (Ridley); Selangor: Kwala Lumpur (Ridley); Trengganu: Cherating River (Ridley); Penang: Western Road (Curtis); Perak: Larut (King's Collector), Ipoh (Curtis 3129).

2. T. rubrum, Ridl. l.c. Roots few slender terete, stem minute. Leaves none. Raceme an inch long very slender, upper half only floriferous. Bracts ovate distichous pubescent red. Flowers minute red, ovary with short nearly sessile. Sepals, petals and lip connate. Sepals lanceolate acute. Petals linear. Lip as long triangular lanceolate, spur broad saccate shorter than the ovary.

Sungei Ujong: Linsum (Ridley).

52. Pelatantheria, Ridl.

Stems tall climbing. Leaves oblong, obtuse. Racemes short. Sepals and petals similar. Lip side lobes adnate to column, midlobe large flat, spur short a callus in the mouth of the spur, and a tooth like one on the midlobe. Column very short and thick with long erect arms. Anther 2 celled. Pollinia 2, caudicle short and broad subquadrate, disc as large or reniform.

Species three, India, Cochin China and Malaya.

P. CRISTATA, Ridl. Journ. Linn. Soc. XXXII. 373. Stems 8 inches long. Leaves 2 inches long ½ inch across thick blunt. Racemes 4 inches long rachis thickened. Bracts ovate. Flowers ⅜ inch across with short thick pedicels. Upper sepals oblong spathulate, laterals falcate, with a green crested keel, yellowish white with red stripes. Petals oblong white striped red. Lip white with pink stripes, side lobes long incurved, midlobe cordate acuminate spur short conic blunt, callus in mouth of spur clubbed, large. Column white, arms long incurved. Anther with an oblong truncate beak. Pollinia elliptic, pedicel very short and broad, much shorter than the disc of two large curved processes. Rostellum bifid. *Cleisostoma cristatum,* Ridl. Trans. Linn. Soc. III. 370.

Pahang: Kota Glanggi, and Tahan River (Ridley).

53. SARCOCHILUS, Br.

Stem usually short. Leaves oblong coriaceous. Racemes short or long often thickened upwards. Flowers medium sized fugacious. Sepals and petals subequal, or petals smaller, free or rarely the two lower sepals adnate to the lip. Lip attached to the column foot, lateral lobes small or fairly large, midlobe very small or almost absent spur horizontal porrect, large. Column fairly long usually dilated upwards, arms none, foot always present and often long. Anther ovate. Pollinia 2, with a narrow rarely broad pedicel and small disc.

Species 30. Indian, Malayan and Australian.

In some descriptions of the species of this genus the column foot has been taken for the claw of the lip, and the spur which is curiously pushed forward and horizontal or upcurved taken for the midlobe, this organ being taken for a callus, but it is I think quite clear as to the so-called fleshy midlobe of the lip being really the spur. The genus *Ornitharium,* Lindl. restored by King in the Ann. Bot. Gard. Calc., I would keep under *Sarcochilus.* It chiefly differs in the complete suppression of the midlobe, and even of the side lobes.

Stems short, leaves crowded.

- Flowers over an inch across .. .. 1. *S. unguiculatus.*
- Flowers less than an inch across.
  - Rachis not thickened .. .. .. 2. *S. caligaris.*
  - Rachis thickened, spur globose .. 3. *S. cladostachys.*
  - Rachis thickened, spur long clubbed .. 4. *S. stenoglottis.*
  - Rachis thickened, spur conic .. .. 5. *S. tanyphyllus.*
  - Rachis thickened, spur conic very short 6. *S. virescens.*
  - Rachis flat, bracts distichous.
    - Flowers very small .. .. 7. *S. biserratus.*

Stem tall. Leaves distant.

- Lateral sepals adnate to lip .. .. 8. *S. adnatus.*

1. S. UNGUICULATUS, Lindl. Bot. Reg. 1840. Misc. 67. Stem short stout, about 2 inches long. Leaves lorate thickened coriaceous blunt, 6 inches long 1½ inch wide, sheaths about ½ inch long. Raceme 5 inches long thickened upwards. Bracts ovate small. Flowers large over an inch across, pedicel and ovary 1 inch long. Sepals and petals lanceolate, petals subacute, acute white or yellow. Lip short lateral lobes incurved oblong large, falcate, purple midlobe broad, at base and abruptly narrowed to the blunt apex, a low callus between the side lobes, and a large double one behind, all yellowish spotted purple, spur short globose, narrowed in at the base. Column broad narrowed at base dilate upwards, foot long white. Anther ovate shortly beaked. var. *aureus.* Sepals and petals yellow. *Sarcochilus aureus,* Hook. fil. Fl. Brit. Ind. VI. p. 35. Ann. Roy. Bot. Gard. Calc. V. 64.

Perak (Kunstler). Distribution Borneo, Philippines.

2. S. CALIGARIS, Ridl. Trans. Linn. Soc. III. 372. Stem very short. Leaves lorate falcate acute unequally bifid 3-5 inches long ¾ inch wide. Raceme half inch long, rachis not thickened. Flowers 3 or 4 ¾-1 inch across fugacious. Bracts ovate acute. Sepals lanceolate acute. Petals subspathulate narrower, all white. Lip side lobes quadrate or linear erect crimson, midlobe very small retuse white, with two yellow spots at its base, spur short broad clubbed. Column beaked. Pollinia elliptic, pedicel broadly triangular spathulate disc triangular small. Rostellum bifid with acute lobes. Capsule linear 4 inches long. *Phalaenopsis fugax,* Kranzlin Gard. Chron. 1893. II. p. 360. (e descr).

Singapore in dense forest: Bukit Timah, Chan Chu Kang, etc., (Ridley); Pahang: Pekan (Ridley); Selangor: Kwala Lumpur Caves (Ridley); Perak (Herb. Bot. Gard. Singapore).

3. S. CLADOSTACHYS, Hook. fil. Fl. Brit. Ind. VI. 35. Stem short, leaves crowded lorate apex bifid, 6-12 inches long 1½-2 inches wide. Peduncle 1-2 inches long, rachis thickened, few flowered. Bracts ovate acute. Flowers 1½ inch across, cream colour. Sepals and petals lanceolate acuminate. Lip shorter, side lobes oblong obtuse pale purple midlobe bifid lobes quadrate, spur globose spotted with purple. Column short. Anther acute in front. Foot of column spotted purple. Ann. Roy. Bot. Gard. Calc. p. 43. t. 64.

Perak (Kunstler, Scortechini). Differs from *S. caligaris* in its large leaves, thickened rachis, and acuminate sepals and petals.

4. S. STENOGLOTTIS, Hook. fil. Fl. Brit. Ind. VI. 34. Stem short and stout about 3 inches long. Leaves oblong lorate coriaceous broadly obtuse, 8 inches long 2½ inches wide. Raceme 3 inches long thickened upwards many flowered. Flowers half an inch across opening one and 2 at a time fugacious. Bracts small ovate. Sepals oblong obtuse, laterals broader. Petals lanceolate obtuse, all white,

bases yellow, with crimson transverse streaks. Lip shorter narrow sigmoid, flattened laterally, side lobes low with two short points, midlobe ovate small, spur long curved upwards, clubbed, all white. Column foot very short, dilated upwards. Anther ovate beaked. Pollinia subreniform, caudicle oblanceolate cuneate, disc small shield shaped. Hook. fil. Ann. Roy. Bot. Gard. Calc. V. 41. Pl. 62. *S. sigmoideus,* Ridl. Journ. Linn. Soc. XXXI. 298.

Perak (Scortechini). Distrib. Borneo, Sumatra.

5. S. TANYPHYLLUS, Ridl. Trans. Linn. Soc. II. 3. 372. Stem very short hardly an inch long stout. Leaves 4 or 5 lorate 1 to nearly 2 feet long, an inch and a half across, unequally bluntly bilobed. Racemes 4-5 inches long hardly dilate above. Bracts persistant lanceolate $\frac{3}{16}$ inch long. Flowers white rather large pedicels one inch long. Sepals lanceolate acuminate acute. Petals broader lanceolate subacute. Lip shorter, side lobes lorate falcate blunt small, spur conic blunt. Column short foot with a narrow erect base then abruptly deflexed. Anther beaked. Pollinia elliptic pedicel cuneate oblong, disc broad triangular. Rostellum with two long linear acuminate points. Capsule rather short oblong $1\frac{1}{2}$ inch.

Pahang: limestone rocks Kota Glanggi (Ridley).

6. S. VIRESCENS, Ridl. Journ. Roy. As. Soc. Str. Br. Vol. XXXVII. p. 85. Stem very short. Leaves lanceolate subacute $1\frac{1}{2}$ inch long $1\frac{1}{2}$ inch wide or less. Raceme 1 inch long, bracts ovate. Flowers 1 inch across. Sepals ovate acute. Petals narrower lanceolate, all light green. Lip very short white, side lobes short rounded, midlobe represented by an orange callus, spur short broad conic. Column short and thick, foot as long curved. Anther orange beak triangular.

Perak: Tapah (Aeria) drawing in Herb. Penang. Endemic. This little species is allied to *S. viridiflorus,* Hook. fil. of Ceylon which has a larger lobed callus on the lip and blunt sepals and petals.

7. S. BISERRATUS, Ridl. Journ. Bot. 1900. p. 73. Stems crowded slender 3-4 inches long. Leaves narrowly linear lanceolate acute fleshy 4 inches long $\frac{1}{4}$ inch wide, sheaths $\frac{1}{8}$ inch long. Racemes flattened 6 inches long $\frac{1}{8}$ inch wide. Flowers distichous $\frac{1}{2}$ inch across, very numerous but appearing singly. Bracts ovate very small. Pedicel $\frac{1}{4}$ inch long. Upper sepal lanceolate acute, laterals oblique. Petals narrower, all yellow white, Lip side lobes linear acute curved outwards midlobe minute, spur long conic horn shaped porrect $\frac{1}{4}$ inch long, all white except the mouth of the spur violet. Column slender straight white foot short. Anther ovate orange. Pollinia globose, caudicle linear disc very small ovate.

Perak near Ipoh (Ridley 10156). Endemic.

8. S. ADNATUS, Ridl. Journ. Linn. Soc. XXXII. 373. Stem tall and stout. Leaves lorate coriaceous, unequally bifid, 6 inches long 1 inch wide. Racemes 3 inches long, with a stout purple peduncle. Flowers 12-16 fleshy, 1 inch long on pedicels the same length. Bracts ovate small. Upper sepal elliptic obovate obtuse laterals adnate to the column foot and lip, beneath apices rounded free, all yellow with red spots. Petals lanceolate yellow. Lip with a narrow claw side lobes oblong obtuse, midlobe shorter ovate, spur porrect broad obtuse entrance partly closed by a process, yellow tipped with reddish brown. Column rather with a short foot. Anther ovate obtuse. Pollinia 2 globose, caudicle linear very short joined at an angle with a very much longer linear on disc very small. Rostellum very long subulate acute.

Singapore: Sungei Toas (Ridley); Johor: Kota Tinggi (Ridley). Endemic.

EXCLUDED SPECIES.

S. amplexicaulis, Rchb. fil. is *Thrixspermum lilacinum,* Rchb. f.

S. archnites, Rchb. fil. is *Thrixspermum Arachnites,* Rchb. f.

S. brachystachys, Hook. fil. is *Thrixspermum calceolus,* Rchb. f.

S. filiformis, Hook. fil. is *Dendrocolla filiformis,* Ridl.

S. hirsutus, Hook. fil. is *Ascochilus hirsutus,* Ridl.

S. hirtulus, Hook. fil. is *Ascochilus hirtulus,* Ridl.

S. lilacinus, Griff. is *Thrixspermum lilacinum,* Rchb. f.

S. notabilis, Hook. fil. is *Thrixspermum notabile,* Ridl.

S. recurvus, Hook. fil. is *Dendrocolla pardalis,* Ridl.

S. scopa, Hook. fil. is *Thrixspermum Scopa,* Ridl.

S. Scortechinii, Hook. fil. is *Thrixspermum Scortechinii,* Ridl.

S. trichoglottis, Hook. fil. is *Dendrocolla trichoglottis,* Ridl.

54. ASCOCHILUS, Ridl.

Small epiphytes stem short with lorate or linear falcate leaves crowded, or elongate with terete leaves. Scapes short muricate or hairy flowers small in a short raceme. Bracts short quaquaversal, rachis not or hardly thickened. Lateral sepals larger than the upper sepal and decurrent or adnate to the column foot. Petals narrower. Lip 3-4 lobed, side lobes large, midlobe large or very small, spur cylindric pendulous or porrect thick. Column usually tall and slender, foot narrow as long or longer. Anther beaked. Pollinia 2 globose, caudicle linear disc small. Capsule narrow cylindric.

Species 5 or 6. Andamans, Malaya and Siam.

Stem elongate leaves terete	1. *A. teres.*
Stem short leaves broad.	
Lip 4 lobed	2. *A. hirtulus.*
Lip 3 lobed.	
Sepals narrow acute yellow glabrous ..	3. *A. siamensis.*
Sepals broad barred red, hairy	4. *A. hirsutus.*
Sepals lanceolate flowers very small glabrous	5. *A. minutiflorus.*

1. A. TERES, Journ. Roy. As. Soc. Straits Br. Vol. XXXIX. p. 85. Stem 6 inches or more tall, slender. Leaves terete acute 4½ inches long, ⅛ inch thick, sheaths half an inch long ribbed and transversely wrinkled. Raceme slender 4 inches long. Flowers few scattered ¼ inch across. Bracts very small ovate. Ovary and pedicel ⅜ inch long. Upper sepal oblanceolate hooded, laterals oblique much larger oblong ovate. Petals broadly spathulate oblique shorter. Lip side lobes erect lanceolate falcate, midlobe hastate basal lobes rounded apex subacute, spur half the length of the lip curved obtuse. Column as long as its foot nearly as long as the petals arms short and broad.

. Johor: on Bukit Banang, Batu Pahat (Ridley).

2. A. HIRTULUS, Ridl. Journ. Linn. Soc. XXXII. p. 375. Stem short half an inch long. Leaves falcate linear acute 2-3 inches long. Scapes half an inch or little more long muricate raceme very short. Bracts ovate, minute. Flowers nearly ½ inch across. Upper sepal lanceolate, lateral sepals adnate to column foot much larger oblanceolate obtuse. Petals linear lanceolate, all cream with pink spots. Lip side lobes erect linear curved, midlobe bilobed lobes as long linear, spur short curved blunt. Column tall slender, foot narrow linear. Anther long beaked, acute. Capsule narrowly cylindric shorter pedicelled 1½ inch long ⅛ inch through. *Sarcochilus hirtulus,* Hook. fil. Fl. Brit. Ind. VI. Pl. 89. Ic. Pl. t. 2121.

Pahang: Kota Glanggi (Ridley 2364); Malacca (Maingay); Selangor: Kwala Lumpur Caves (Ridley); Penang: Waterfall (Ridley); Perak (Scortechini); Lankawi (Curtis).

3. A. SIAMENSIS, Ridl. Journ. Linn. Soc. XXXII. p. 375. Stem an inch long, with long slender roots. Leaves 5 inches long, hardly ⅛ inch wide lorate falcate bilobed acute, scapes 3 inches long muriculate, racemes very short. Bracts minute ovate. Pedicels ⅛-¼ inch long. Flowers ¼ inch across. Upper sepal elliptic lanceolate acute, laterals much larger rhomboid oblique keeled acute. Petals linear lanceolate curved, all ochre yellow. Lip white, side lobes oblong apex rounded midlobe tongue shaped small blunt, spur long slender cylindric blunt. Column sigmoid, with a long slender foot, and short erect blunt arms. Anther oblong shortly beaked. Pollinia globose, caudicle narrow linear.

Lankawi (Curtis). Distrib. Siam.

4. A. HIRSUTUS, Ridl. Stem short stout. Leaves lorate narrowed at the base 4-8 inches long, 1-1½ inch wide, sheaths short. Scapes pendulous short 1-1½ inch long hairy. Flowers crowded at the end fleshy 4-8, pedicels ¾ inch long hairy. Bracts ⅛ inch long ovate hairy. Upper sepal oblong obovate laterals oblique larger, all hairy, yellow with Indian red bars and blotches. Petals lanceolate smaller. Lip side lobes oblong erect, with two horn shaped processes between, midlobe very small truncate notched, spur large dilated at the base then abruptly narrowed, whole lip white with red blotches on the side lobes and spur, shorter than the sepals. Column rather short, foot fairly long. Anther large ovate beaked, two celled. Pollinia 2 globose caudicle linear disc ovate. *Sarcochilus hirsutus,* Hook. fil. Fl. Brit. Ind. VI. 38. Ann. Roy. Bot. Calc. V. p. 44. Pl. 67.

Perak (Kunstler), Teluk Anson (Curtis). A curious plant connecting *Sarcochilus* and *Ascochilus.* The sepals are adnate to the foot of the column and oblique, the lip and spur are rather those of *Sarcochilus.*

5. A. MINUTIFLORUS, Ridl. Journ. Roy. As. Soc. S. Br. Vol. XXXIX. p. 85. Stem very short. Leaves linear lanceolate falcate acute, 3 inches long ½ inch wide or less, sheaths very short. Scape very slender 1 inch long pubescent raceme very short. Bracts cucullate ovate. Flowers ⅛ inch across. Upper sepal lorate oblong, laterals lanceolate all keeled yellow with red spots. Petals obcuneate yellow with a red spot at the base. Lip side lobes large oblong truncate, midlobe very short truncate entire, spur short blunt rather thick saccate scrotiform obtuse. Column tall curved slender, foot hardly as long. Anther long beaked.

Pahang: Kwala Tembeling (Ridley).

55. AERIDES, Lour.

Stems long. Leaves linear unequally bilobed or terete. Flowers in long lax or dense racemes, or few. Sepals broad and spreading, laterals adnate to the foot of the column. Petals broad. Lip adnate to the end of the column foot, side lobes usually large sometimes absent, midlobe usually larger spur pendent, calli none. Column short foot short or long. Anther two celled. Pollinia 2 globose caudicle long or short. Rostellum bifid.

Species 10. India, Malaya and Cochin China.

AE. ODORATUM, Lour. Fl. Cochin Ch. 525. Stems about a foot or more stout, leaves lorate coriaceous a foot long ½ inch wide, unequally bilobed blunt. Scape a foot long or less, base nude except for small distant sheaths. Raceme lax. Bracts ovate lanceolate acute. Flowers 1 inch across, fragrant pedicels 1 inch long. Upper sepal obovate

obtuse, laterals much larger. Petals narrower oblong all pinkish white darker at the tips. Lip large saccate side lobes long upcurved obtuse, midlobe narrow acute, white or pinkish dotted pink, spur curved horn shaped usually tipped green. Column short straight with a long broad foot. Anther ovate bluntly beaked. Pollinia globose caudicle linear. Capsule fusiform 1-1¼ inch long. Lindl. Gen. and Sp. Orch. Pl. 239. Journ. Linn. Soc. III. 41. Bot. Mag. t. 4139. Paxt. Fl. Gard. II. t. 143. Maund. Botanist IV. t. 180. Hook. fil. Fl. Brit. Ind. VI. 47. King. Ann. Roy. Bot. Gard. Calc. VIII. 212 pl. 282. *Ae. cornutum,* Roxb. Hort. Beng. 63. Fl. Ind. III. 472. Bot. Reg. t. 1485. *Ae. suavissimum,* Lindl. Journ. Hort. Soc. IV. 263. Paxt. Fl. Gard. II. 141. t. 66. Hook. fil. Fl. Brit. Ind. l.c.c. *Ae. Reichenbachii,* Lindl. Koch and Fintelm. Wochenschrift. 1858. 61. Rchb. fil. Xen. Orch. II. 11. t. 104. *Ae. nobile,* Warner Sel. Orch. Ser. I. t. 11. Gartenflora 40. t. 641.. *Ae. Rohanianum,* Rchb. fil. Gard. Chron. 1884. I. 206. *Ae. flavidum,* Lindl. Paxt. Fl. Gard. II. 101. *Ae. Ballantinianum,* Rchb. fil. Gard. Chron. 1885. II. 198. *Ae. virens,* Lindl. Bot. Reg. 1843. Misc. p. 48. Bot. Reg. t. 41. Paxt. Fl. Garden 1874. p. 197. *Ae. suaveolens,* Bl. Mus. 1. p. 112. Rumphia p. 53. t. 193. f. I.

Johor: Pulau Tinggi (Nanson); Malacca (Maingay); Selangor: Bukit Hitam (Kelsall); Perak (Ic. in Hort. Calcutta); Penang (fide Hooker); Kedah: Yan (Ridley); Lankawi (Curtis). Distrib. India, China, Cochin China, Malay Islands. Variable in depth of colour and form of the small midlobe.

56. Thrixspermum, Lour.

Terrestrial or epiphytic plants, stems generally long, rooting at intervals. Leaves amplexicaul ovate or oblong or lorate coriaceous, with rather or very long sheaths. Peduncles of scapes long with short flat racemes of distichous bracts persistent. Flowers large fugacious opening at considerable intervals. Sepals and petals similar ovate obtuse or caudate. Lip saccate side lobes falcate, midlobe usually fleshy, one or two calli on the disc. Column with a short foot. Anther ovate. Pollinia 2 elliptic with a small or large disc, no caudicle. Capsule elongate.

Species 11. India, Malayan and Cochin China.

Sepals and petals caudate.

Stem tall. Leaves ovate amplexicaul .. 1. *T. lilacinum.*

Stems long leaves lanceolate.

Midlobe large conic .. .. .. 2. *T. calceolus.*

Midlobe small obtuse .. .. .. 3. *T. pauciflorum.*

Stem short. Lip lobes indistinct .. 4. *T. brachyglottis.*

Sepals and petals caudate. Lip 3 lobed.

Sepals linear lanceolate caudate ..	5. *T. arachnites.*
Sepals linear caudate ¾ inch long ..	6. *Th. crassifolium.*
Sepals lanceolate acuminate 2½ inch long	7. *T. Scortechinii.*
Sepals and petals caudate. Lip entire	8. *T. notabile.*

1. Th. LILACINUM, Rchb. fil. Xenia. Orch. II. p. 121. Stems several feet long 3-6. Leaves ovate amplexicaul unequally bilobed an inch long ¾ inch wide. Peduncles stiff 4 to 10 inches long, racemes 3-6 inches long. Bracts ovate ¼ inch long. Flowers an inch across, white or pale lilac, pedicels nearly an inch long. Sepals and petals ovate obtuse. Petals smaller all spreading. Lip shorter, side lobes falcate acute, midlobe blunt conic, with an oblong truncate callus on the disc, base of lip saccate. Column short broad, foot short. Anther small conic. Pollinia deeply bifid oblong, with a triangular disc. Capsule subcylindric 4 inches long ¼ inch thick. Ridl. Journ. Linn. Soc. XXXII. *Sarcochilus lilacinus,* Griff. Notul. III. p. 334. Ic. Pl. As. t. 320. f. 2. Hook. fil. Fl. Brit. Ind. Vol. VI. p. 40. Bot. Mag. t. 7754. Rchb. fil. Walp. Ann. VI. p. 499. *Dendrocolla amplexicaule,* Bl. Bijdr. p. 288. *Acrides amplexicaule,* Lindl. Gen. and Sp. Orch. Pl. p. 239. *Orsidice amplexicaulis* and *O. lilacinus,* Rchb. fil. Bonplandia II. p. 93.

Singapore: Holland Road, Selctar (Ridley 1792); Pahang: Pulau Chengei, Pahang River (Ridley 2351), Pekan (Ridley 1385); Malacca: Ayer Panas (Derry 284), Chabau (Native Coll.); Selangor: Pudu (Goodenough); Perak: Taiping (Ridley), Changkat Jerin (Wray 1872); Penang (H. Singap.). Distrib. Borneo.

In open grassy swamps. Blume's description of *Dendrocolla amplexicaule* does not agree with this plant, and it is perhaps not conspecific. Native name "Rumput Sesudu Paya."

2. T. CALCEOLUS, Rchb. fil. Xenia. Orch. II. p. 122. Stems stout 10 to 12 feet long, slightly flattened. Leaves lanceolate coriaceous 2-4 inches long unequally bilobed, sheaths ribbed ½ inch long. Racemes an inch long, 1 to 3 together numerous, sessile. Bracts ovate cucullate ¼ inch long. Flowers few opening singly or in pairs on each raceme, 2 inches across white fragrant, pedicel and ovary ½ an inch long. Sepals widely lanceolate acute keeled. Petals narrower oblanceolate. Lip shoe shaped base saccate, side lobes falcate acute, midlobe conic obtuse, callus oblong truncate excavate at apex, all white except an orange spot round the callus, and small orange and crimson dots at the base of the lip. Column short white. Anther thin ovate quadrate. Pollinia semipyriform ; disc reniform. Capsule cylindric 6 inches long. *Sarcochilus Calceolus,* Lindl. Bot. Reg. (1846) t. 19. *S. brachystachys,* Hook. fil. Fl. Brit. Ind. VI. p. 41.

Singapore: Jurong River (Ridley 8069), Pulau Tekong (Ridley 2032); Johor: Tana Runto (Ridley), Batu Pahat (Ridley 11213); Pahang: Kwala Tenok (Ridley 2363); Sungei Ujong: Gunong Angsi (Ridley); Dindings: Telok Sera (Curtis); Penang Hill (Maingay). Distrib. Sumatra.

3. Tri. pauciflorum, Ridl. l.c. Stem rigid $\frac{1}{3}$ inch in diameter, flexuous. Leaves oblong obtuse rather distant 2½-3 inches long 1¼ to 1½ inch wide coriaceous. Racemes short an inch long, few flowered, basal sheaths imbricate. Bracts subacute $\frac{1}{8}$ inch long. Sepals oblong lanceolate acute $\frac{2}{3}$ inch long, white. Petals nearly as large obovate oblong obtuse. Lip stipitate yellow side lobes broad rounded obtuse midlobe small fleshy obtuse with a conic callus at the base, and a broad lamella between the side lobes, saccate base of lip conic. Column short. Anther ovate obtuse depressed. Pollinia 2, deeply bifid, caudicle short. *Sarcochilus pauciflorus,* Hook. fil. Fl. Brit. Ind. VI. 41.

Perak: Larut Hills at 3000 feet (Scortechini). Allied to *T. Calceolus,* Rchb. fil. but differs in the smaller flowers, straight blunt side lobes and short blunt midlobe of the lip.

4. Tri. brachyglottis. Ridl. Stem rather slender short. Leaves elongate oblanceolate acuminate bifid or entire 4-8 inches long by one inch to 1½ inch wide. Scape short stout an inch long few flowered. Flowers white tinted pink ½ inch across. Sepals lanceolate acute mucronate. Petals oblong obovate obtuse. Lip not half as long sessile at the base of the column subcuneate truncate laterally compressed hollow with a short spur below the blunt fleshy tip. Column short footless, broad with large erect triangular acute arms. Anther ovate acuminate. Pollinia 2 globose caudicle linear disc shield shaped. *Sarcochilus brachyglottis,* Hook. fil. Ann. Bot. Roy. Gard. Calc. V. 42. Pl. 63.

Perak (Kunstler). Endemic. I have only seen the figure of this plant. It is difficult to refer it to any genus. The column and lip to some extent suggest an infinity with *Thrixspermum Calceolus,* Rchb. fil. The pollinia and habit suggest a *Sarcochilus.*

5. Tri. arachnites, Rchb. fil. Xen. Orch. II. 121. Stems 4-6 inches long. Leaves lorate oblong 6 inches long ¾ inch wide apices bilobed, sheaths 1 inch long. Scapes several, peduncles 6-8 inches long, racemes 3-12 inches long. Bracts close set acute ¼ inch long. Flowers on short pedicels hardly longer than the bracts. Petals and sepals similar 2 inches long linear lanceolate caudate, yellow. Lip fleshy yellow with red spots ½ inch long side lobes erect falcate acute, midlobe obtuse thick, a quadrate truncate callus on the disc, base of lip saccate almost spur like blunt. Column narrow straight. Anther conic. Pollinia ovoid, caudicle transversely oblong, disc as broad.

Capsule cylindric 3 inches long ¼ inch through. *Sarcochilus arachnites,* Rchb. fil. Walp. Ann. VI. 498. Hook. fil. Fl. Brit. Ind. VI. 41. *Dendrocolla arachnites,* Bl. Bijdr. 287. t. 67. *Aerides arachnites,* Lindl. Gen. and Sp. Orch. Pl. 238. *S. Scopa,* Hook. fil. Fl. Brit. Ind. VI. 46.

Singapore: Tanglin, Seletar (Ridley); Johor: Batu Pahat (Ridey); Selangor: Bukit Hitam (Kelsall); Perak: Larut (King's Coll. 5777); Penang (Kunstler). Distrib. Borneo, Sumatra, Java. Often scrambling on low bushes, or on trees. I can see no characters to distinguish *S. Scopa,* Hook. fil. which appears to be merely the elongate form found on trees.

6. Th. crassifolium, Ridley Journ. Roy. As. Soc. Str. Br. Vol. XLI. p. 32. Whole plant 6 inches tall with a stout stem and close set leaves, sheaths under half an inch long purple blade oblong obtuse thick leathery apex rounded 4 inches long 1¼ inch thick. Scapes 3 to 5 inches long stiff base purple. Inflorescence 1½ to 4 inches long. Bracts ¼ inch long close set flattened ovary and pedicel ¼ inch long. Sepals linear caudate from a broader base ¾ inch long bright yellow. Petals narrower linear caudate. Lip ¼ inch long pubescent orange passing into cherry scarlet at the tip, spur saccate blunt side lobes arched blunt midlobe fleshy blunt ovate, callus tongue shaped rounded at the tip depressed in centre. Column white with rounded broad wings. Anther hemispheric. Fruit angled linear 3 inches long ¼ inch through.

Johor on old coffee trees, at Castlewood (Ridley). Endemic. A plant of the habit of *Th. Scortechini* with much smaller flowers even than those of *Th. arachnites.*

7. Th. Scortechinii, Ridl. l.c. Stem 6 inches long very stout internodes ¾ inch long. Leaves oblong lorate bilobed coriaceous 4-6 inches long 1-1½ inch wide. Scape 9 inches long, raceme 2 inches. Bracts close set ⅝ inch long. Sepals and petals lanceolate acuminate, 2½ inch long ¼ inch wide at the base, yellow. Lip saccate side lobes short midlobe conical obtuse fleshy, yellowish thick mottled with rusty red inside. Pollinia 4 disc lunate caudicle oblong. *Sarcochilus Scortechinii,* Hook. fil. Fl. Brit. Ind. VI. 40.

Perak (Scortechini); Kedah: Gunong Jerai (Ridley). Endemic.

8. T. notabile, Ridl. Journ. Linn. Soc. XXXII. 379. Stem short 2 inches long. Leaves broad lorate or oblong, green or deep purple 3 inches long ½-1 inch wide. Scapes very slender about 3 inches long, purple, with a few distant sheaths, raceme an inch long. Bracts acute, ovate purple. Flowers ¾-1 inch across. Sepals linear very narrow acuminate caudate. Petals similar, yellow or reddish.

Lip saccate ovate cuspidate side lobes not distinct, yellow, with pink spots. Column short broad, foot indistinct adnate to the lip. Anther caudicle tranversely oblong, disc ovate. *Sarcochilus (Ridleya) notabilis,* Hook. fil. Fl. Brit. Ind. VI. p. 42. Ic. Pl. 2126.

Singapore: Chan Chu Kang, Bukit Mandai (Ridley); Johor: Batu Pahat (Ridley). Endemic.

57. Dendrocolla, Bl.

Small epiphytes, stems short. Leaves lorate coriaceous or terete. Scapes erect, with a long peduncle, rachis of short raceme thickened or not. Bracts persistent not distichous. Flowers few opening singly fugacious. Sepals and petals usually spreading free. Lip broad often convolute and pubescent side lobes small or indistinct, spur none. Column short and thick foot narrow. Pollinia 2, caudicle very small or absent, disc large. Capsule linear.

Species about 20. Burmah, Ceylon, Malay Islands.

Leaves filiform	1. *D. filiformis.*
Leaves lorate. Lip pubescent.	
Bracts subulate recurved	2. *D. pardalis.*
Bracts ovate acute.	
Lip midlobe very small truncate. Flowers pale yellow side lobes short ..	3. *D. trichoglottis.*
Flowers pure white side lobes large ..	4. *D. alba.*
Lip midlobe linear	5. *D. maculata.*
Lip midlobe ovate no callus	6. *D. ciliatum.*
Lip midlobe ovate with a woolly callus ..	7. *D. carnosa.*
Lip glabrous, side lobes distinct linear.	
Stem and scape long	8. *D. carinatifolia.*
Stem and scape short	9. *D. psiloglottis.*

1. D. filiformis, Ridl. Journ. Linn. Soc. XXXII. 382. Stems 2-4 inches long, slender. Leaves few terete slender acute 6 inches long sheaths half an inch long. Scapes slender 3 inches long, raceme across, pedicel and ovary ½ inch across. Sepals lanceolate obtuse. Petals a little smaller, white. Lip much shorter, side lobes erect rounded orange, midlobe oblong elliptic fleshy yellow, pulverulent. Column rather long foot short. Anther oblong quadrate, thin flat 2 celled, disc transverse connecting the two subreniform pollinia. *Sarcochilus filiformis,* Hook. fil. Fl. Brit. Ind. VI. p. 39. Ic. Pl. t. 2124.

Singapore: Bukit Mandai, etc. (Ridley); Perak (King's Collector). Endemic.

2. D. PARDALIS, Ridl. Journ. Linn. Soc. XXXII. p. 382. Stems 10 inches long or less with numerous long roots. Leaves lanceolate lorate unequally bifid lobes acute 2 inches long ¼ inch wide. Scapes six to ten inches long slender, racemes 2 inches long, rachis thickened with crowded subulate bracts. Flowers hardly ½ inch across. Sepals ovate obtuse. Petals much smaller linear, all white with pink spots. Lip obcuneate truncate sides involute yellowish with reddish tint covered with white wool, callus oblong linear obtuse. Column short thick. Anther ovate. Pollinia elliptic on a rounded disc. *Sarcochilus pardalis,* Ridl. Trans. Linn. Soc. II. iii. 371. *S. recurvus,* Hook. fil. Fl. Brit. Ind. VI. 39. Ic. Pl. 2122.

Pahang: Pulau Chengei, Pahang River (Ridley 2365); Perak: Gopeng (King's Collector 6040), "Limbo Hills" Larut (King's Collector). On low trees and shrubs. Native name "Suttong Terbang." Hooker's *S. recurvus* is probably this plant but the flowers are not described. Distrib. Borneo.

3. D. TRICHOGLOTTIS, Ridl. Journ. Linn. Soc. XXXII. 381. Stem 2 to 6 inches long erect, roots long. Leaves stiff lorate obtuse unequally bilobed 1¾-2 inches long ⅜-½ inch wide. Scapes stiff peduncle ½-2 inches long, raceme ½ inch long thickened. Bracts ovate mucronate. Flowers ½ inch across, pedicels shorter. Upper sepal lanceolate acute, laterals much wider ovate lanceolate keeled. Petals narrower spathulate, all pale yellow. Lip much shorter base saccate, side lobes very short broad truncate erect hairy midlobe very small truncate, a small oblong retuse callus between the lobes all yellowish, with an orange spot near the callus. Column white foot narrow orange. Anther ovate obtuse. Rostellum entire, flat. Capsule cylindric slender 5 inches long. *Sarcochilus trichoglottis,* Hook. fil. Fl. Brit. Ind. VI. p. 39. Ic. Pl. t. 2123.

Singapore: very common, Tanglin, Bukit Timah (Ridley); Pahang: Pekan (Ridley 2366, 1303); Perak: Kwala Kangsa (Ridley), Dindings near Bruas (Ridley), Chanderiang (King's Collector 5934); Tringganu: Bundi (Rostado). Distrib. Borneo.

4. D. ALBA, Ridl. Journ. Roy. As. Soc. S. Br. Vol. XLIV. p. 191. Stems 3 to 4 inches long roots copious long and slender. Leaves lorate lanceolate fleshy dark green 1 to 2 inches long ¼ inch wide obtuse. Scapes 4 inches long slender green, racemes ¼ inch long thickened. Bracts ovate acuminate quaqua versal. Flowers one or two open at once on pedicels ¼ inch long white ¾ inch across. Sepals lanceolate acute. Petals narrower and shorter narrowed at the base, lip ¼ inch long saccate, lateral lobes short distinct curved blunt edged with short thick clubbed hairs, midlobe little longer rounded blunt excavate, callus in the centre at the base of the midlobe oblong truncate white with light brown blotches inside the pubescent sac and similar

spots on the side lobes and midlobe and tip of callus. Column white oblong, foot narrower blotched brown, anther skull shaped. Pollinia ovoid, pedicel very short and broad.

Perak: Kamuning near Sungei Siput on coffee trees (Machado).

5. D. MACULATA, Ridl. Journ. Linn. Soc. XXXII. 381. Stems 3 inches long. Leaves linear coriaceous bilobed. Scape 3 inches long stiff, raceme 3 inches long, rachis thickened. Bracts ovate acute. Flowers ½ inch across, pedicels slender. Sepals lanceolate spathulate, laterals dilated at the base yellow. Petals narrower. Lip shorter side lobes rounded toothed pubescent yellow with crimson spots, midlobe linear yellow pubescent, base of lip saccate long, an oblong retuse callus in the centre. Column short broad with broad involute wings, foot rather long. Anther with rather a long truncate beak. Pollinia oblong reniform, disc reniform.

Singapore: Bukit Mandai, Chua Chu Kang (Ridley).

6. D. CILIATUM, Ridl. Journ. Roy. As. Soc. S. Br. Vol. XLIV. p. 192. Stem about an inch long. Leaves crowded 6 elliptic obtuse narrowed at the base fleshy dark green 2½ inches long ¾ inch wide. Peduncle slender 2 inches long raceme hardly thickened. Bracts ovate acute rather distinct minute. Flowers opening singly pedicels ¼ inch long. Sepals patent oblong obtuse ochreous yellow ¼ inch long. Petals narrower and shorter. Lip as long side lobes oblong rather long erect white edged with long hairs white midlobe short conic fleshy. Column stout straight anther helmet shaped beaked orange red. Pollinia ovoid shortly stalked orange, pedicel oblong flat indented at the sides disc about ½ its length triangular pale orange yellow. Clinandrium flat with two orange triangular flaps.

Perak: Kamuning, Sungei Siput (A. D. Machado).

7. D. CARNOSA, Ridl. Journ. Bot. 1898. Stem 2 inches long. Leaves narrowly linear lanceolate acuminate acute, thick 3 inches long ¼ inch wide, sheaths ¼ inch long. Scapes slender 3 inches long raceme thickened an inch long. Bracts ovate acute. Flowers small pedicels ¼ inch long. Sepals and petals oblong ovate yellow. Lip shorter side lobes long and broad, base saccate, midlobe fleshy ovate obtuse with a woolly papilla at base.

Penang (Curtis).

8. D. CARINATIFOLIA, Ridl. Journ. Linn. Soc. XXXII. 382. Stems 6 inches long flattened. Leaves fleshy oblong blunt, 2 inches long ½-1 inch wide. Scapes slender 6 inches long, raceme an inch long slightly thickened. Bracts rather distant lanceolate acute. Flowers white. Upper sepal lanceolate acuminate, laterals enlarged at base. Petals shorter linear lanceolate. Lip base saccate side lobes long linear acuminate midlobe shorter ovate thick blunt with a blunt

rounded callus, all white except a yellow spot on the base of the lip outside. Column straight thick. Anther quadrate. Pollinia oval deeply bifid disc oval. Capsule slender linear cylindric 3 inches long. *Sarcochilus carinatifolius,* Ridl. Journ. Straits As. Soc. 1891. p. 136.

Johor: Kwala Sedili Besar, Pulau Aor (Feilding). Distrib. Christmas Island.

9. D. PSILOGLOTTIS, Ridl. Stem short 1½ inch long. Leaves lorate 2 inches long ¼ inch wide apex rounded bluntly bilobed, sheaths short. Scapes erect 3 inches long slender, raceme short ¼ inch long not thickened. Bracts lanceolate acuminate subulate recurved. Flowers ¼ inch across. Upper sepal lanceolate acute, laterals triangular acute, pale yellow with an orange spot at base. Petals subspathulate yellow. Lip short side lobes long linear white, midlobe obtuse recurved fleshy white with an orange central spot. Capsule cylindric linear 2 inches long. *Sarcochilus psiloglottis,* Ridl. Trans. Linn. Soc. III. 372.

Pahang: on trees Kwala Pahang (Ridley).

58. ACRIOPSIS, Reinwdt.

Pseudobulbous epiphytes, with linear or oblong articulated leaves. Scape racemose or panicled, with small pink and white or yellow flowers. Petals and sepals spreading narrow laterals sometimes connate. Lip spurless adnate to the column by its claw half way up, 3 lobed with a central callus. Column tall arched apex hooded, curved, arms long porrect. Anther ovate. Pollinia 2 narrow with a long slender caudicle and a very small disc. Rostellum ovate entire. Capsule globose.

Species 5. Malay Peninsula and Islands.

Leaves linear. Scape panicled.
- Lip lanceolate, side lobes broad .. .. 1. *A. javanica.*
- Lip very narrow linear, side lobes small .. 2. *A. indica.*

Leaves linear. Scapes racemose.
- Midlobe orbicular .. .. 3. *A. Ridleyi.*

Leaves oblanceolate broad. Scape racemose .. 4. *A. purpurea.*

1. A. JAVANICA, Reinwdt. Flora Literat. 1825 II. 4. Syllog. Ratisb. 1828. Pseudobulbs crowded ovoid, about an inch long. Leaves 2-3, narrowly linear 3-6 inches long ⅓-¼ inch wide. Panicle over a foot long, slender with few or no long slender branches. Flowers half an inch across, pedicel and ovary ⅛ inch long. Bracts very small. Upper sepal lanceolate, laterals connate, lanceolate, white tipped crimson. Petals spathulate white with crimson central bar. Lip side lobes broad flat rounded, midlobe lanceolate blunt with two

little triangular keels in the centre white with a central violet crimson spots. Column rosy, arms long. Capsule globose ½ inch long. Blume Bijdr. 377. Lindl. Gen. and Sp. Orch. Pl. 140. Walp. Ann. VI. 492. Hook. fil. Fl. Brit. Ind. VI. 79. *A. picta,* Lindl. Bot. Reg. XXIX. Misc. 105. *A. Griffithii,* Rchb. fil. Bonplandia II. 92. *A. crispa,* Griff. Notul. III. 333. Ic. Pl. Asiat. t. 318. *Spathoglottis trivalvis,* Lindl. Gen. and Sp. Orch. 120.

Singapore (Wallich 3742), Tanglin, Changi (Ridley); Johor: Bukit Murdom, Batu Pahat (Kelsall 4006); Malacca (Cuming 2067); Pahang: Pekan (Ridley); Selangor: Pahang Track (Ridley); Sungei Ujong (native collector); Perak: Larut Hills, Hermitage Hill (Ridley); Penang: Balik Pulau (Curtis 2473). Distrib. Tenasserim, Sumatra, Java.

Common on orchard trees etc., growing also in tufts of grass at Pekan. Native names "Angrek Darat," "Sakat Bawang," "Sakat Ubat Kapialu." A decoction of the plant is used for fever.

2. A. INDICA, Wight Icones. t. 1748. Pseudobulbs crowded ½ inch long covered with old sheaths. Leaves very narrow linear 3 inches long less than ⅛ inch wide. Scape 6-8 inches long panicled with several long 4 inch branches peduncle 2-3 inches long. Flowers less than ⅛ inch across pedicels nearly ¼ inch long. Bracts minute. Sepals narrow linear oblong, laterals connate. Petals broader oblong retuse shorter, all yellowish spotted red. Lip very narrow linear with two short lobes at the base, callus bilobed near the lip base. Column hood large, arms slender long. Capsule ½ inch long globose. Walp. Ann. VI. 492. Hook. fil. Fl. Brit. Ind. VI. 79.

Penang: Government Hill (Curtis 2472).

3. A. RIDLEYI, Hook. fil. Fl. Brit. Ind. VI. 79. Pseudobulbs ovate subcompressed crowded an inch long. Leaves 2-3 linear obtuse 4 inches long ¼ inch wide. Scape racemose, a foot long. Flowers few, about 16, larger than those of *A. javanica.* Upper sepal linear, laterals spathulate connate. Petals spathulate broader, all yellow with red spots. Lip white side lobes oblong, midlobe orbicular with a narrow base, callus of two short keels on the claw of the midlobe crimson. Column hood long upcurved, white with crimson spots, arms long clubbed, porrect. Anther ovate obtuse.

Singapore: Bukit Mandai (Ridley). A single plant only met with.

4. A. PURPUREA, Ridl. Trans. Linn. Soc. II. iii. p. 406. Pseudobulbs crowded oblong ¾ inch long ½ inch through. Leaves 2 oblanceolate coriaceous 1½ inch long ½ inch wide blunt. Scape fairly stout 5 inches long racemose. Flowers about 13 secund, fleshy, pedicel and ovary ½ inch long violet and green. Bracts very small ovate.

Upper sepal narrow apex decurved, laterals similar connate. Petals spathulate blunt, all dark purple. Lip violet rose edged with white, spathulate oblong truncate side lobes 2 small ears, callus entire square in the centre of the midlobe white. Column purple arms long hood decurved broad. Capsule oblong ½ inch long.

Pahang: Pekan (Ridley) rare. Distrib. Borneo.

59. Thecostele, Rchb. fil.

Epiphytes, pseudobulbs ovoid, crowded. Leaf solitary large. Raceme pendulous from the side of the pseudobulb. Flowers numerous small pink and white, pedicels short. Sepals free, spreading laterals oblipue. Petals smaller. Lip base adnate to the base of the column and forming a tube with it blade clawed with two short or large side lobes and a larger midlobe. Column upper part slender curved with well developed arms. Base of foot adnate to lip. Anther thin. Pollinia 2, with one or two caudicles and a broad disc. Capsule subglobose beaked three-valved.

Species 6. Malayan, Tenasserim to Java.

Flowers small, numerous.
- Side lobes of lip very small .. .. 1. *Th. maculosa.*
- Side lobes of lip large clubbed .. .. 2. *Th. Zollingeri.*

Flowers few, large an inch across.
- Lip midlobe large, side lobes smaller .. 3. *Th. secunda.*
- Midlobe small, side lobes large falcate no extra linear processes .. .. .. 4. *Th. Maingayi.*
- A pair of linear processes before the side lobes .. .. 5. *Th. quinquefida.*

1. Th. maculosa, Ridl. Trans. Linn. Soc. II. p. 374. Pseudobulbs crowded conic 4 inches long. Leaf lanceolate oblong 12 inches long, 3 inches wide. Scape pendulous 12-18 inches long, flowers numerous small. Bracts small ovate. Pedicel short and thick. Upper sepal oblong subacute, laterals broader oblong oblique. Petals very narrow lanceolate acuminate falcate all yellowish with chestnut purple spots. Lip tube thick straight, side lobes very short curved white midlobe broad pandurate retuse pubescent white with dark crimson tips and a horse-shoe shape crimson central spots. Column slender curved, arms linear lorate. Anther flat, pollinia 2 globular with short pedicels and a large quadrate disc. Capsule ovoid beaked ¾ inch long three valved. *Collabium Wrayi,* Hook. fil. Fl. Brit. Ind. V. p. 784. Ic. Pl. t. 2065.

Malacca (Goodenough); Sungei Ujong: Burunang (native collector Herb. Singap.); Pahang: Kwala Tahan (Ridley); Perak:

Taiping (Ridley), (Wray 2557), (Scortechini); Kedah: Yan (Ridley). Native name "Sakat Belimbing."

2. Th. Zollingeri, Rchb. fil. Bonplandia V. 1857 p. 37. Xen. Orch. II. 133. t. 147. Pseudobulbs ovoid conic 1½ inch long. Leaf lanceolate obtuse 8 inches long 3 inches wide. Scape pendulous 6 inches long lax flowered. Flowers ½ inch across, pedicels short. Bracts ½ as long ovate acute. Upper sepal lanceolate, laterals adnate to column base ovate rhomboid, subacute much broader. Petals very narrow linear, all white tipped and blotched crimson, base orange. Lip tube long, lateral lobes large obovate spathulate twisted spoon-shaped pubescent yellowish red, midlobe ovate with a narrow base and deeply bilobed apex glandular pubescent pink. Column slender arched, arms long curved. Anther 2 celled. Pollinia globose on very short caudicles with a broad oblong disc. *Th. alata,* Par. and Rchb. fil. Trans. Linn. Soc. XXX. 135. *Cymbidium alatum,* Roxb. Fl Brit. Ind. III. 459.

Penang: Government Hill (Curtis); Perak: Waterloo Estate (Curtis 2308, 2309). Distrib. Borneo, Tenasserim.

3. Th. secunda, Ridl. Journ. Linn. Soc. Bot. XXXI. p. 299. Pseudobulbs ovoid oblong 1½ inch long 1 inch through. Leaf lanceolate subacute, 8 inches long 1½ inch broad. Raceme 3 inches long pendulous. Flowers about 10, secund, an inch across. Upper sepal boat-shaped curved acute green, laterals broadly ovate acuminate light green with a median red stripe. Petals linear lanceolate acuminate acute, green with 3 red stripes. Lip tube fairly long, side lobes arched rounded, olive green, with two curved processes between blade ovate white with a yellow spot edged crimson in the centre and a purple spot near the tip. Column dark maroon long, arms long curved. Anther conic with a broad base, pollinia 2 fusiform with a single caudicle tapering to the apex, disc small.

Perak: Taiping (Ridley), Tapa (Aeria), (Scortechini drawing 80), Waterloo (Curtis). Distrib. Borneo.

4. Th. Maingayi, Hook. fil. Fl. Brit. Ind. VI. 20. Ic. Pl. 2118. Pseudobulbs ovate oblong ribbed ⅝ to 1 inch long. Leaf elliptic or obovate oblong 3-4 inches long, 1-1¼ inch wide narrowed into a petiole. Raceme 4-5 inches long, flowers scattered an inch across. Upper sepal lanceolate acute, laterals much broader ovate acuminate. Petals lanceolate acuminate narrower. Lip small velvety, tube long, claw wide and half as long, side lobes large curved with two curved clubbed processes between, midlobe small ovate. Column tall curved. Pollinia 4 on a long narrow strap dilated upwards, apex glandular.

Malacca (Maingay). Only known from Maingay's description and specimen. It is clearly near *secunda* but has a much smaller lip, with larger side lobes in proportion to the midlobe and 4 pollinia.

5. Tri. QUINQUEFIDA, Hook. fil. Fl. Brit. Ind. VI. 20. Ic. Pl. 2119. Pseudobulbs ovate oblong 1-1½ inch long. Leaf linear elongate narrowed to a petiole, 5-7 inches long 1-1½ inch wide. Raceme 2-3 inches long decurved. Bracts small ovate. Flowers ⅔ inch across. Upper sepal lanceolate boat-shaped, laterals ovate acute. Petals linear lanceolate. Lip pubescent with 2 erect linear auricles at the base, side lobes large curved obtuse, midlobe ovate.

Malacca (Maingay).

60. Podochilus, Bl.

Epiphytic or rupestrial herbs, stems usually short tufted not swollen terete or flattened, leafy. Leaves distichous, oblong, lanceolate or linear, articulated (in Malayan species). Racemes lateral or subterminal, short flowers usually very few small, white or green rarely pink. Upper sepal lanceolate, laterals broader prolonged into a mentum. Petals smaller. Lip little longer base saccate adnate to the column foot, usually entire, side lobes absent, with or without a callus on the disc or at the base of the sac. Column short and thick with a foot, arms absent or very obscure. Anther ovate beaked, pollinia 4 to 8 clubbed, narrowed to a long or short caudicle or pair of caudicles, or caudicles absent, disc usually one rarely two. Rostellum ovate or lanceolate erect acute, entire or bifid. Capsule small elliptic.

Species 47. Indian, Malayan.

I have followed Schlechter in amalgamating *Appendicula* with *Podochilus*, which has long been obviously necessary.

§ 1. Apista. Very slender mossy plants with small leaves and minute flowers.

Stems creeping.

Lip sagittate at base .. .. .. 1. *P. tenuis.*

Lip rounded at base .. .. .. 2. *P. sciuroides.*

Stems tufted ascending .. .. 3. *P. lucescens.*

§ 2. Appendicula. Erect usually stout plants, leaves broad or narrow long.

Stems flattened winged .. .. 4. *P. anceps.*

Stems terete. Bracts small.

Leaves narrow linear .. .. .. 5. *P. rupestris.*

Leaves broad.

Stems long pendulous. Lip spathulate .. 6. *P. unciferus.*

Stems erect stiff.

Lip with a callus on the disc. Flowers glabrous.

Callus square	7. *P. cornuta.*
Callus hooked	8. *P. uncata.*
Callus conic. Leaves thick shining ..	9. *P. lucida.*
Leaves oblong, close	10. *P. densifolia.*
Flowers hairy	11. *P. muricata.*
Lip with no callus.	
Stem short stout, leaves oblong	12. *P. reflexa.*
Stem tall.	
Lip oblong pandurate	13. *P. pendula.*
Lip cuneate apex trilobed	14. *P. lancifolia.*
Inflorescence a terminal head.	
Bracts larger than flowers distichous ..	15. *P. torta.*
Bracts numerous forming a tuft.	
Stems short erect..	16. *P. callosa.*
Stems very long, pendulous	17. *P. Hasselti.*

§ 1. Apista.

1. P. tenuis, Lindl. Orch. Pl. p. 235. A slender tufted moss like plant, stems often branched 3-12 inches long. Leaves linear acute ⅜ inch long sheaths shorter. Racemes subterminal very short flowers minute white. Upper sepal ovate obtuse, laterals larger oblique, mentum. Petals oblong ligulate obtuse. Lip oblong obtuse concave. Column short foot long. Anther ovate cordate. Pollinia lanceolate compressed attached to two separate discs, rostelum 3 lobed. Miq. Fl. Ind. Bot. III. 687. Schlechter Monographie der Podochilinae p. 12. *P. acicularis,* Hook. fil. Fl. Brit. Ind. VI. p. 82. Ic. Pl. 2147.

Pahang: Tahan River (Ridley); Selangor: Pahang Track (Ridley 8463); Perak: Sungei Rayah (Kunstler 982), Larut Hills (Ridley), (Wray 2916); Bujong Malacca (Ridley 9825), (Scortechini 1298); Kedah: Gunong Jerai (Ridley); Penang (Maingay), (Ridley). Distrib. Java. On wet mossy trees and rocks.

2. P. sciuroides, Rchb. fil. Bonplandia V. p. 41. A slender much branched plant, stems 4 to 8 inches long tufted and often forming large mats roots thicker than the stem. Leaves oblong elliptic ¼ inch long mucronate. Racemes or panicles subterminal hardly ¼ inch long, slender. Flowers very small white. Bracts ovate half as long as the ovary. Sepals ovate, laterals oblique, mentum bilobed broad blunt. Petals nearly as long and broader very blunt, with a median violet line. Lip oblong apex blunt decurved, no calli. Column short. Anther lanceolate acute, pollinia 6 elongate pyriform, caudicle solitary, disc ovoid minute red. Rostellum triangular lanceolate minutely

bifid. Schlechter l.c. 21. *P. microphyllus,* Hook. fil. Fl. Brit. Ind. VI. 81. Miq. Fl. Ind. Bat. III. 688. (not Lindley). *Cryptoglottis serpyllifolia,* Rchb. fil. l.c. p. 41. not of Blume.

Singapore: Chan Chu Kang (Ridley), Kranji (Ridley 362); Johor: Bukit Pengarani, Gunong Pulai (Ridley); Pahang: Pekan River (Ridley 2372); Malacca: Mount Ophir (Ridley); Perak: Bujong Malacca (Curtis 3124); Penang: Bukit Laksamana (Curtis 1733); Kedah: Gunong Jerai (Ridley). Distrib. Java. Common on mossy trees.

3. P. LUCESCENS, Bl. Bijdr. 295. t. 12. Stems tufted 6 inches or more tall erect unbranched. Leaves narrow elliptic $\frac{3}{8}$ inch long $\frac{1}{8}$ inch wide apex unequally bilobed obtuse. Racemes subterminal $\frac{1}{2}$ inch long slender. Bracts subdistichous ovate acute. Flowers minute white. Sepals and petals lanceolate subobtuse, mentum very short. Lip distinctly 3 lobed, side lobes broad rounded, median linear oblong with three raised ribs on the disc. Column very short arms elongate acuminate. Anther ovate obtuse, pollinia 4 elongate pyriform with a calyptrate disc. Rostellum 3 lobed median lobes longest, acuminate. Lindl. Orch. Pl. p. 234. Miq. Fl. Ind. Bat. III. 687. Hook. fil. Fl. Brit. Ind. VI. 82. Schlechter l.c. p. 17.

Kedah: Gunong Raya (Curtis 2559); Penang Waterfall (Curtis). Distrib. Tenasserim, Java, Borneo.

4. P. ANCEPS, Schl. l.c. 33. Stems 6 inches to 18 inches flat pale green. Leaves lanceolate or elliptic base rounded blunt unequally bifid light green $1\frac{1}{2}$-2 inches long $\frac{1}{2}$-$\frac{3}{4}$ inch wide, sheaths $\frac{1}{2}$-1 inch long flattened. Racemes lateral or terminal half inch long. Bracts lanceolate blunt deflexed. Flowers small greenish white. Sepals ovate obtuse, mentum short rounded. Petals similar to the upper sepal but smaller. Lip shorter than sepals rounded entire ovate blunt, no callus, white with two purplish streaks in the spur. Column short with a very broad oblong foot, purple above base green. Anther aciniform crimson pustulate acute. Pollinia 6 pyriform, disc very small lanceolate red. Rostellum ovate acute bifid. *Appendicula anceps,* Bl. Bijdr. 299. Lindl. Orch. Pl. p. 228. Miq. Fl. Ind. Bat. p. 702. *A. Lewisii,* Griff. Calc. Journ. Nat. Hist. IV. p. 378. t. 19. Notul. III. p. 360. Ic. Pl. As. t. 337. Hook. fil. Fl. Brit. Ind. VI. p. 83. *A. complanata,* Ridl. Journ. Linn. Soc. XXXII. p. 389. *Metachilum cyathiferum,* Lindl. Orch. Pl. p. 74.

Singapore (Wallich 2022); Johor: Gunong Banang, Batu Pahat (Ridley), Gunong Pulai (Ridley 3173); Selangor: Caves, Kwala Lumpur (Ridley 8130), Rawang (Ridley 7790), Bukit Hitam (Kelsall); Malacca: Batu Tiga (Derry 977); Perak: Relau, Tujor (Wray 4030), (Scortechini), Larut Hills (King's Coll. 2609); Penang: West Hill (Curtis 993), (Ridley 7242). Distrib. Java.

5. P. RUPESTRIS, Schlechter l.c. p. 56. Stems tufted on a short stout rhizome slender erect, unbranched 8 inches tall. Leaves linear lanceolate 1 inch long $\frac{1}{8}$ inch wide, sheaths $\frac{1}{4}$ inch long. Racemes subterminal an inch long or less. Bracts lanceolate subacute deflexed. Flowers very small white. Upper sepal ovate lanceolate larger, mentum short obtuse. Petals smaller lanceolate. Lip oblong elliptic blunt. Column short, hood long, no arms. Anther rounded cordate blunt. *Appendicula rupestris,* Ridley Journ. Linn. Soc. XXXII. 391.

Pahang on rocks in the Tahan River (Ridley 2368); Perak: Bujong Malacca (Curtis 3127).

6. P. UNCIFERUS, Hook. fil. Fl. Brit. Ind. VI. p. 81. Ic. Pl. XXII. t. 2145. Stems 2-3 feet long pendulous slender branched. Leaves elliptic blunt 1 inch long $\frac{1}{2}$ inch across sheaths $\frac{1}{4}$ inch long. Racemes numerous axillary slender filiform an inch long flexuous. Flowers pink scattered $\frac{5}{16}$ inch long. Bracts lanceolate acuminate $\frac{1}{8}$ inch long. Upper sepal lanceolate subacute, laterals much broader ovate, mentum long clubbed $\frac{1}{8}$ inch long. Petals shorter oblong lanceolate ovate acute, all whitish tipped violet rose. Lip base linear spathulate truncate, entire white tipped violet rose, callus at base of lip longer strap shaped retuse. Column short, arms very small. Anther long beaked. Pollinia 6 in two bundles each enclosed in a calyptrate pedicel, disc orbicular. Rostellum very short bifid. Capsule $\frac{1}{4}$ inch long fusiform. Ridley Journ. Linn. Soc. XXXII. 385. *P. longicalcarata,* Rolfe. Kew Bulletin 1894. 186. *P. undulatus,* Schlechter l.c. 42. *Appendicula purpurascens,* De Vriese Illustr. t. 12. f. 1. (not of Blume).

Pahang: Kota Glanggi (Ridley 2369); Perak: Larut Hills 2-5000 feet (Curtis 2062), (W. Fox), (Ridley 10676). Distrib. Borneo, Java, Sumatra, Philippines.

7. P. CORNUTA, Schlechter l.c. 35. Stems tufted terete 6-12 inches tall. Leaves oblong, bilobed nearly equally, base half amplexicaul, $\frac{3}{4}$-1 inch long $\frac{3}{8}$ inch wide, sheaths terete striate $\frac{1}{4}$ inch long. Racemes subterminal and lateral $\frac{1}{4}$ inch long. Bracts ovate longer than the ovary. Flowers white $\frac{1}{4}$ inch long. Sepals ovate, laterals oblique mentum as long. Petals ovate elliptic or obovate smaller. Lip base oblong with an inner horse-shoe shaped lamina, hardly 3 lobed, terminal lobe ovate deflexed or nearly lanceolate with a square callus in the centre. Column short foot long with long erect acuminate arms. Pollinia 6 to 8 elongate pyriform with a small red lanceolate disc. Rostellum ovate acuminate bifid. Capsule oblong $\frac{1}{4}$ inch long. *Appendicula cornuta,* Bl. Bijdr. p. 302. Lindl. Orch. Pl. 229. Miq. Fl. Ind. Bat. III. 703. *A. bifaria,* Lindl. Hook. Kew Journ. VII. 35. Benth. Fl. Hongk. 358. Walp. Ann. VI. 893. Hook.

fil. Fl. Brit. Ind. VI. p. 82. Ridl. Journ. Linn. Soc. XXXII. 387. King. Ann. Roy. Bot. Calc. VIII. 248. Pl. 330. *A. reduplicata,* Rchb. fil. and Par. Ot. Hamb. p. 45. *A. manillense,* Rchb. fil. Miq. l.c. p. 763. *Dendrobium manillense,* Schau. Nat. Act. Acad. Cur. XIX. Suppl. p. 430.

Singapore: Kranji, Bukit Timah (Ridley 373); Malacca: Mount Ophir (Ridley); Selangor: Bukit Hitam (Kelsall), Gap (Curtis); Pahang: Tahan River (Ridley 2370); Perak: Dindings, Lumut (Ridley 7244); Taiping (Scortechini); Penang: Government Hill Kedah: Gunong Raya (Curtis), Gunong Jerai (Ridley). Distrib. Rhio, Sumatra, Java, Borneo, Philippines, Hongkong, India.

8. P. UNCATA, Ridl. Stems over a foot tall tufted rather stout. Leaves lanceolate acute 2-3 inches long rather thin ½ inch wide sheaths ½ inch long ribbed. Racemes lateral or subterminal ½ inch long rachis thick. Bracts ovate strongly ribbed reflexed. Flowers white Sepals ovate acute, mentum rather large blunt. Petals ovate lanceolate smaller. Lip oblong with a rounded apex, a claw shaped callus on the disc. Column thick short. Anther elongate lanceolate acute. Rostellum rather long triangular bifid. Capsule oblong ½ inch long. *Appendicula uncata,* Ridl. Journ. Linn. Soc. XXXII. 390.

Singapore: Bukit Timah Road (Ridley 6931); Selangor: Petaling (Ridley).

9. P. LUCIDA, Schlechter l.c. 37. Stems crowded 6 inches long, leaves cordate ovate amplexicaul unequally bifid polished bright green ¾ inch long ½ inch wide, sheaths terete ¼ inch long. Flowers whitish green in short axillary panicles. Bracts small ovate brown. Sepals ovate blunt, mentum thick short. Petals lanceolate smaller all green with a pale purple median line. Lip base oblong apex ovate orbicular white with a conic callus in the centre. Column thick, arms hardly distinct. Anther ovate beaked truncate. Pollinia 6 narrowed to the ovate disc. Rostellum long bifid. *Appendicula lucida,* Ridl. Journ. Linn. Soc. XXXII. p. 392.

Singapore: Bukit Timah, Kranji, Chan Chu Kang (Ridley); Selangor: Sepang (Ridley). Distrib. Rhio, Borneo.

10. P. DENSIFOLIA, Ridley Journ. Roy. As. Soc. S. Br. Vol. XXXIX. p. 86. Stems over a foot long, covered with close distichous leaves, oblong obtuse bases broad an inch long ½ inch broad, sheaths ¼ inch long. Racemes 2 terminal an inch long, densely flowered to the base, rachis stout, bracts ovate reflexed. Flowers ⅛ inch long white. Sepals ovate obtuse mentum rather long. Petals ovate but little smaller. Lip ovate acute fleshy an irregular fleshy callus in the centre with a thickened ridge running to the tip. Column short. Rostellum long deeply bifid acuminate. Anther lanceolate subacute,

Pahang: Tahan River (Ridley 2370). This has the raceme of one of the *pendula* section but the column with a long rostellum and the callus of the lip is rather that of *P. cornuta.*

11. P. MURICATA, Schlechter l.c. 64. Stems tufted 6 inches tall slender terete. Leaves oblong obtuse rounded ¼ inch long and half as wide, sheaths very short. Flowers few terminal white. Sepals lanceolate acute covered as is the ovary with hairs, mentum very short hardly distinguishable. Petals lanceolate narrower. Lip violet oblong dilated rounded at the tip with a short conical tooth. Column stout arms long and broad acuminate. Stigma crimson. Anther with a long green beak. Pollinia 4 nearly equal lanceolate fixed to a spoon-shaped pedicel, disc elliptic. Rostellum long acuminate bifid. Capsule ¼ inch long elliptic hairy. *Appendicula muricata,* Teysm. and Binn. Tijdschr. Ned. Ind. V. XXIV. 322. Ridley Journ. Linn. Soc. XXXII. p. 392. *A. echinocarpa,* Hook. fil. Fl. Brit. Ind. VI. 83. Ic. Pl. t. 2152.

Perak (Scortechini), Bujong Malacca (Ridley), Gunong Batu Putih (Wray 968); Kedah: Gunong Jerai (Ridley 5142); Selangor: Bukit Hitam (Ridley).

12. P. REFLEXA, Schlechter l.c. p. 31. Stems rather stout over a foot long. Leaves close thinly coriaceous oblong elliptic an inch long half inch across dark shining green equally bilobed, sheaths nearly half inch long. Racemes axillary half inch long with a few lanceolate acuminate bracts at the base. Flowers crowded very small. Bracts lanceolate obtuse. Upper sepal narrow lanceolate ovate obtuse, laterals much larger ovate, mentum as long rounded. Petals smaller linear all light green. Lip white, sides adnate to column base with a horse-shoe shaped ridge at the base an ovate acute recurved blade. Column short. Anther pyriform beaked. Pollinia 6 pear shaped on a small brown disc. Arms of column very short. Capsule sessile oblong ¼ inch long. *Appendicula reflexa,* Bl. Bijdr. 301. Lindl. Orch. Pl. 229. Miq. Fl. Ind. Bat. III. 703. Ridl. Journ. Linn. Soc. XXXI. 390. *A. cordata,* Hook. fil. Fl. Brit. Ind. VI. 83. Ic. Pl. t. 2148.

Johor: Batu Pahat (Ridley); Pahang: Tahan River (Ridley); Perak (Scortechini). Distrib. Java.

13. P. PENDULA, Schlechter l.c. 48. Stems erect 1-2½ feet tall. Leaves lanceolate thin 2-2½ inches long ¼-½ inch wide, apex very unequally bilobed acute, sheaths ½ inch long. Racemes axillary or subterminal pendulous 1-8 inches long. Bracts ovate reflexed persistent. Flowers small. Upper sepal lanceolate laterals ovate mentum short and broad. Petals narrow lanceolate, all pale green. Lip oblong pandurate blunt, with an inner semilunar lamella, white edged purple, lamella purple. Column short and thick yellowish marked purple

in front. Anther ovate orange. Pollinia 8 very unequal on a small rounded disc. Column arms very short. Rostellum shortly bifid. *Appendicula pendula,* Bl. Bijdr. 298. Lindl. Gen. and Sp. Orch. Pl. p. 228. Miq. Fl. Ind. Bat. III. 701. *A. Chalmersiana,* Fv. Muell. Wing. South Science Record 1885. *A. Maingayi,* Hook. fil. Fl. Brit. Ind. VI. 85. Ic. Pl. 2151. *Conochilus distichus,* Hassk. Tijdsch. Nat. Ges. IX. p. 146.

Perak (Scortechini); Penang (Maingay 1617), Government Hill (Curtis 2822), (Ridley 7243). Distrib. Java, Borneo, Philippines, New Guinea.

14. P. LANCIFOLIA, Schlechter l.c. 51. Stems tall over two feet sometimes branched. Leaves thin dark green 1½-4 inches long ¼ to 1 inch wide, apex subacute, sheaths ¼-½ inch long. Racemes terminal 2-3 inches long. Bracts ovate lanceolate reflexed. Flowers small ⅛ inch long green or yellow. Sepals ovate acute mentum short broad. Petals obovate oblong blunt. Lip free cuneate oblong, apex 3 lobed lobes rounded short midlobe ovate subacuminate, a curved horse-shoe shaped lamina running as far as the side lobes. Column short, foot long. Rostellum triangular bifid. Column arms short truncate. *Appendicula lancifolia,* Hook. fil. Fl. Brit. Ind. VI. 84. Ic. Pl. XXII. 2150.

Selangor: Bukit Hitam (Ridley); Perak: Gunong Batu Putih (King's Coll. 8032), Larut Hills 5000 alt. (Ridley 2886). This is very near *P. pendula* Schl.

15. P. TORTA, Schlechter l.c. 60. Stems tufted 6-8 inches long, flattened, seldom branched. Leaves oblong rounded ½ inch long wide, sheaths ⅛ inch long. Spike terminal ¼ inch long. Bracts distichous ovate white leaf-like ¼ inch long recurved. Flowers hidden in the bracts yellowish white small. Sepals lanceolate acute, laterals very oblique acuminate, mentum long parallel to the column. Petals lanceolate subacute broader. Lip base oblong apex broadly and orbicularly bilobed, lobes rounded. Column short arms rounded foot long. Anther ovate acuminate crimson. Pollinia 4 connate into a caudicle with an oblong disc. *Appendicula torta,* Bl. Bijdr. p. 303. Lindl. Gen. and Sp. Orch. Pl. 230. Miq. Fl. Ind. Bat. III. 704. Rchb. fil. Xen. Orch. 11. 117. t. 138. Hook. fil. Fl. Brit. Ind. VI. p. 84. *A. rhodiola,* Rchb. fil. Xenia. II. p. 118. t. 138. *A. Peyeriana,* Kranzl. Gard. Chron. X. 1891. p. 669.

Selangor: Rawang, Kwala Lumpur Caves (Ridley); Perak (Scortechini); Larut Hills (Ridley). Distrib. Java, Borneo.

16. P. CALLOSA, Schlechter l.c. 62. Stems tufted 6-18 inches long terete. Leaves distichous twisted at the base so that the one edge is uppermost oblong obtuse, unequally bilobed, ¼ inch long ⅛ inch

wide sheaths hardly ¼ inch long truncate the angles prolonged into setaceous points. Capitulum terminal of numerous brown crowded bracts. Flowers small white. Sepals ovate lanceolate acute mentum rather long obtuse. Petals narrow linear. Lip base oblong rounded, limb ovate orbicular with a yellow transversely oblong callus at its base. Column stout, foot long, arms erect broad incurved pink. Anther ovate cordate. Pollinia 8 narrow clubbed attached to a circular disc. Rostellum long obtuse entire. Capsule sessile cylindric ¼ inch long. *Appendicula callosa,* Bl. Bijdr. p. 303. Lindl. Orch. Pl. p. 230. Miq. Fl. Ind. Bat. III. 704. Griff. Calc. Journ. Nat. Hist. V. p. 362. t. 62. Rchb. fil. Ot. Hamb. p. 45. Hook. fil. Fl. Brit. Ind. VI. 83. Ridl. Journ. Linn. Soc. XXXII. 388. *A. stipulata,* Griff. Notul. III. p. 358. Ic. Pl. As. t. 335. fig. II.

Singapore: Sumbawang, Bukit Timah (Ridley); Johor: Kwala Kahang (Kelsall), (Ridley 4039); Pahang: Tahan River (Ridley); Malacca, Mount Ophir (Ridley); Sungei Ujong; Perak: Larut Hills (Ridley), (Scortechini); Penang: Government Hill (Curtis 358). Distrib. Tenasserim, Sumatra, Java, Borneo, Celebes. The commonest species growing on rocks or trees.

17. P. Hasselti, Schlechter l.c. 62. Stems three feet long pendulous flattened. Leaves oblong obtuse base broad apices rounded bilobed, ¾ inch long and half as wide, sheaths ¼ inch long truncate. Flowers white crowded in a terminal head of many bracts ½ inch long. Sepals ovate subacute laterals wider. Petals lorate subobtuse smaller. Lip sigmoid 3 lobed, margins adnate to column edge, side lobes rounded midlobe longer crisped concave, a callus running longitudinally from the base to the midlobe. Column short, foot slender arms long erect. Capsule sessile oblong ¼ inch long. *Appendicula Hasselti,* Bl. Bijdr. p. 304. Lindl. Orch. Pl. 230. Miq. Fl. Ind. Bat. III. 704. *A. elongata,* Ridl. Trans. Linn. Soc. II. 375.

Pahang on trees over the Tahan River (Ridley 2371). Distrib. Java.

61. Thelasis, Bl.

Epiphytes with subglobose pseudobulbs on a shorter or long rhizome. Leaves one or two, the lower one being more or less developed, ligulate, fleshy, obtuse. Scape from the base of the pseudobulb bearing a short or long raceme or spike. Flowers very small greenish yellow, perianth connivent. Sepals lanceolate, petals slightly smaller. Lip ovate lanceolate entire with no callus. Column short rostellum long acuminate bifid. Anther lanceolate. Pollinia 4 to 6 globose on a slender caudicle. Capsule small fusiform.

Species 6. Indian and Malayan.

Raceme short crowded.

Pseudobulbs crowded, rhizome short .. 1. *Th. elongata.*

Pseudobulbs distant, rhizome long stout 2. *Th. capitata.*
Raceme long and lax .. .. 3. *Th. macrobulbon.*

1. Th. elongata, Bl. Orch. Arch. Ind. p. 23. Pl. t. 7. fig. 2. Pseudobulbs ovoid depressed ½ inch long on a short rhizome. Leaf ligulate blunt narrowed at the base 1½-3 inches long ¼-½ inch wide. Scape 3-4 inches long racemose portion ½-3 inches long, covered with reflexed ovate acuminate persistent bracts. Flowers $\frac{3}{16}$ inch long greenish yellow. Sepals oblong acute keeled. Petals thinner and shorter spathulate. Lip as long, ovate lanceolate. Column short. Rostellum lanceolate bifid. Capsule very small oblong. Miq. Fl. Ind. Bat. III. 701. Hook. fil. Fl. Brit. Ind. VI. 86. Schlechter Monogr. Podochil. p. 70. *Th. triptera,* Rchb. fil. Bonplandia III. 219. *Th. Zollingeri,* Rchb. fil. l.c. V. 37. *Th. hongkongensis,* Rolfe. Kew Bull. 1896. 199.

Singapore: Kranji (Ridley 173); Johor: Ulu Batu Pahat (Kelsall); Pahang: Pekan (Ridley); Perak (Scortechini); Lankawi (Ridley). Distrib. Malay Islands as far as the Philippines, Hongkong and Admiralty Islands.

2. Th. capitata, Bl. Bijdr. 386. Orch. Arch. Ind. 20. t. 7. fig. 1. Rhizome very stout, pseudobulbs rather distant nearly an inch long, ovoid globose. Leaf 4 inches long ½ inch wide, lorate ligulate blunt. Scape fairly stout 6 inches long with a sheath ¼ inch long in the middle raceme stout 1 inch long. Bracts ovate acute. Flowers green $\frac{3}{16}$ inch long. Sepals lanceolate acute keeled. Petals similar blunt. Lip ovate lanceolate concave. Lindl. Orch. Pl. 253. Miq. Fl. Ind. Bat. 700. Hook. fil. Fl. Brit. Ind. VI. 86. Schlechter l.c. 69. *Th. ochreata,* Lindl. Journ. Linn. Soc. III. 63. *Th. elongata,* var. *major,* Ridl. Journ. Linn. Soc. XXXII. 393.

Pahang: Tahan River (Ridley); Selangor: Kwala Lumpur Caves (Ridley); Perak (Scortechini). Distrib. Sumatra, Java, Borneo.

I doubt very much that this is more than a form of *Th. elongata* Bl. except for the stout long rhizome, larger leaf and thicker scape, with a rather shorter raceme, the plants are quite similar. It occurs in dense wet woods, while *Th. elongata* frequents more open lighter spots.

3. Th. macrobulbon, Ridl. Journ. Linn. Soc. XXXII. 393. Roots copious and slender, pseudobulbs flask shaped of two internodes, the lower one globose the upper cylindric, an inch long. Leaves two lower one an inch long ¼ inch wide, the upper one 4-6 inches long 1 inch wide lanceolate or oblong petioled. Scape 6-10 inches long, lower half nude except for a few acuminate sheaths raceme lax many flowered. Flowers sessile green. Bracts ⅛ inch long lanceolate cuspidate. Sepals oblong obtuse not keeled. Petals smaller. Lip fleshy shorter

lanceolate subacute. Anther lanceolate, pollinia 4. Rostellum ovate acuminate larger deeply bifid.

Perak: Larut Hills and Bujong Malacca (Ridley).

62. Oxyanthera, Brngn.

Epiphytes, stemless. Leaves distichous ligulate thin textured apices bifid. Scapes axillary about as long as the leaves. Flowers small racemose, periant connivent green or yellow. Sepals and petals lanceolate. Lip lanceolate nearly entire about as long as petals base concave, no callus. Column very short, no foot, arms indistinct. Rostellum much longer than column, deeply bifid. Anther acuminate two celled. Pollinia 6-8 globular on a very slender caudicle. Capsule fusiform.

Raceme elongate straight	1. *O. elata.*
Raceme short decurved	2. *O. micrantha.*

1. O. elata, Hook. fil. Ic. Pl. 2156. Leaves lorate obtuse -12 inches long 1 inch wide, articulated sheathing base two inches long. Scape slender a foot long base nude racemose portion 2-4 inches long. Flowers numerous. Bracts lanceolate ⅛ inch long ovary and pedicel ¼ inch long. Sepals lanceolate connivent at base, acute. Petals smaller, all green at the base tips white. Lip as long as the petals side lobes elevated green, midlobe oblanceolate mucronate white. Column very short green no arms. Rostellum much longer acuminate deeply bifid, white. Anther lanceolate yellow. Pollinia 6 semiglobose, on a long slender pedicel. Capsule ⅛ inch long fusiform terminated by the remains of the perianth. *O. carinata,* Schlechter l.c. p. 77. *Thelasis carinata,* Bl. Bijdr. 386. Orchideae Arch. Ind. p. 25. Pl. 7. fig. 3. Lindl. Orch. Pl. p. 253. *Th. elata,* Hook. fil. Fl. Brit. Ind. VI. p. 87.

Singapore: Sungei Buluh, Kranji (Ridley); Pahang near Pekan (Ridley), Kota Glanggi (Ridley); Selangor: Kwala Lumpur Caves (Ridley 8465); Perak: Goping (King's Coll. 8243), Hermitage (Cock, Curtis 2852); Penang: Government Hill (Maingay). Distrib. Java, Borneo, Sumatra.

Species 2. Malayan and Pacific.

2. O. micrantha, Brngn. Duperry Voy. Bot. p. 198, t. 37 B. Leaves 6 inches long ⅜ inch wide lorate obtuse, sheathing portion 1-1½ inch long. Scape very slender 3-4 inches long fawn colour, with one or two distant sheaths below racemose portion half an inch long or less recurved. Flowers ⅛ inch long fawn colour. Bracts ovate obtuse. Sepals and petals lanceolate obtuse, whitish with fawn coloured bases. Lip lanceolate acute fleshy with thinner edges. Column very short. Anther ovate acuminate. Pollinia 8 globose

with a long slender caudicle. Rostellum very long deeply bifid. Capsule ⅛ inch long fusiform. Schlechter l.c. 77. *O. decurva,* Hook. fil. Ic. Pl. 2157. *Thelasis contracta,* Bl. Mus. Bot. Lugd. Bat. II. 187. Orch. Arch. Ind. 24. t. 5 B. *Th. decurva,* Hook. fil. Fl. Brit. Ind. VI. 87.

Singapore: Kranji (Ridley 1640, 367); Pahang: Tahan River (Ridley); Penang: Government Hill (Maingay). Distrib. Sumatra, Java, Rhio, Borneo, Pulau Condor, Waigiou. Common in mangrove swamps.

III. Neottieae.

63. Vanilla, Sw.

Climbing shrubs with fleshy ovate leaves or none. Racemes short stout axillary. Flowers large and showy. Sepals and petals subequal spreading. Lip large three lobed or subentire adnate to column base, with the sides wrapping the column or explanate. Column long. Anther broad incurved. Pollinia granular. Rostellum broad entire or nearly so. Capsule long fleshy terete. Seeds minute globose.

Species about 20. All tropical countries.

V. Griffithii, Rchb. fil. Bonplandia II. 88. Stem about 20 feet long. Leaves fleshy lanceolate to ovate lanceolate 6 inches long, 3 inches wide or less. Raceme eventually 2 inches long thick. Bracts ovate. Flowers numerous opening singly over 2 inches across. Sepals ovate. Petals linear obovate, greenish white. Lip explanate three lobed side lobes rounded white, disc channelled with chestnut red raised nerves, midlobe broadly bilobed lobes rounded fan-shaped plicate white with a white woolly ball at the base. Column arched white. Anther broad truncate. Fruit 2½ inches long ½ inch through succulent eatable. *V. albida,* Hook. fl. Fl. Brit. Ind. VI. 91. (Not Blume) V. sp. Griff. Notulae III. 207. Ic. Pl. As. t. 281. *V. tolypephora,* Ridl.. Trans. Linn. Soc. III. 376.

Singapore: Changi (Ridley 3924), Pulau Ubin (Ridley); Johor: Batu Pahat; Pahang: Pekan (Ridley); Malacca: Panchor (Goodenough 1520, 1969); Selangor: Bukit Hitam (Kelsall); Perak: Larut Hills (Stephens), (King's Coll. 2537, 2996, 7528); Dindings: Bruas (Ridley), (Scortechini); Penang Waterfall (Curtis 1179, 2271), Telok Bahang (Curtis), (Wallich 7401). Distrib. Karimun Isles. Native names, "Akar Punubal," "Telinah Kerbau Bukit." The flowers pounded with water are used to rub on the body for fever, the leaves are mashed and applied to the hair for strengthening it. The fruits are sweet and eatable. The stem and leaves contain a whitish irritating latex.

64. Galeola.

Terrestrial leafless saprophytes with thick fleshy roots. Stems short or very long yellow branched. Panicles large spreading or a simple raceme with persistent ovate bracts. Flowers moderately large. Lateral sepals larger than upper one. Lip saccate entire. Column long curved or nearly straight almost or quite footless. Anther oblong decurved, with very shallow cells, and a rather long filament. Pollinia 2, ovoid curved no caudicle. Rostellum very short. Fruit capsular long. Seeds minute globular with a broad circular wing.

Species about 14. India, Malaya, Australian and Japanese.

Stem stout furfuraceous	1. *G. Hydra.*
Stem slender glabrous, lip with a woolly callus	2. *G. altissima.*

1. G. Hydra, Rchb. fil. Xenia. Orch. II. 77. Stems long and stout many feet long yellow branched furfuraceous. Sheaths ovate $\frac{1}{2}$ inch long. Inflorescence panicled branches 8 inches long. Bracts $\frac{1}{8}$ inch long. Flowers $\frac{3}{4}$ inch across. Sepals ovate acute, laterals oblique larger yellow. Petals lanceolate oblique white. Lip obscurely 3 lobed denticulate, papillose within yellowish white with dull red streaks. Column stout narrowed upwards curved, with a very short foot, yellowish. Anther oblong yellow streaked red. Fruit cylindric stout 6 inches long $\frac{1}{2}$-1 inch through. Hook. fil. Fl. Brit. Ind. VI. 89. King. Ann. Bot. Gard. Calc. VIII. 364. Pl. 351. *Vanilla pterosperma,* Lindl. Wall. Cat. 7402. *V. rubiginosa,* Griff. Notulae III. 247. *Erythrorchis altissima,* Lindl. Gen. and Sp. Orch. 438. (partly).

Singapore (Wallich 7402), (Hullett 17), Kranji (Ridley 1791, 4037); Malacca: Tabong (Griffith), Bukit Besar Ophir (Ridley); Selangor: Kwala Lumpur Caves (Ridley 8458), (Curtis 351, 2390). Kajang (Ridley 8198); Johor: Gunong Janing (Kelsall); Perak (Scortechini), Larut Hills at 5000 feet (Curtis 2070), (King's Coll. 2657), Waterloo (Ridley 2889); Penang (Curtis). Distrib. Himalaya, Tenasserim, Siam, Java and Sumatra.

2. G. altissima, Rchb. fil. Xen. Orch. II. 77. Stem long yellow very slender 30 to 40 feet long or more. Panicle large, branches slender 8 inches long. Bracts ovate small. Flowers half an inch across yellow and brown. Sepals and petals linear oblong blunt. Lip boat-shaped, apex rounded erose waved, yellow barred purple inside, with a broad fleshy pubescent central bar terminating in a bilobed woolly mass. Column rather long. Capsule narrow linear 8-10 inches long. Hook. fil. Fl. Brit. Ind. VI. 89. *Cyrtosia altissima,* Bl. Bijdr. 396. Rumph. I. t. 70. Lindl. Gen. and Sp. Orch. Pl. 26. *Erytrorchis altissima,* Blume. Rumphia. I. 200. Lindl. l.c. 438 (in part). *Haematorchis altissima,* Bl. l.c. IV. t. 200. B.

Johor: Base of Gunong Panti (Ridley 4143), Bukit Murdom (Kelsall); Province Wellesley: Bukit Juru (Ridley); Perak (Scortechini); Dindings: Lumut (Ridley 7257); Penang: Telok Bahang (Curtis 352).

65. Pogonia, Jussieeu.

(Section *Nervilia*).

Tuberous herbs with short stems and a solitary cordate petioled leaf, appearing before the flowers. Racemes solitary or several on the stem, lax. Flowers solitary or few nodding. Perianth connivent. Sepals and petals narrow. Lip entire or three lobed spurless or with a short spur. Column long. Anther helmet shaped. Pollinia 2 or 4, without disc or caudicle.

Species of section about 12. Tropics of old world.

Stem tall many flowered	1. *P. flabelliformis.*
Stem short, flowers 1 or 2	2. *P. puncata.*

1. P. flabelliformis, Lindl. Gen. and Sp. Orch. Pl. 415. Leaf orbicular cordate many-nerved glabrous, 4 to 10 inches across green, margin waved, petiole 4-8 inches long. Flowering stem 6 to 18 inches tall, lax flowered. Bracts linear acuminate $\frac{1}{2}$ inch long. Flowers pale green 1 inch long, pedicel $\frac{1}{8}$ inch, ovary $\frac{1}{4}$ inch long. Sepals and petals lanceolate acute petals narrower obtuse. Lip 3 lobed about the middle, side lobes obtuse, midlobe ovate acute hairy. Hook. fil. Fl. Brit. Ind. VI. 121. *P. Nervilia,* Bl. Mus. Bot. I. 32. Orch. Arch. Ind. *P. crispata,* Wight. Ic. t. 1720. *Nervilia Aragoana,* Gaud. Freyc. Vol. 7. Bot. 422. t. 35.

Perak: Padang Rengas in long grass (Ridley); Pahang: Tembeling (Ridley). Distrib. India, Malaya, Siam. The Pahang plant is in leaf only but I believe it is this species. The leaves were green with a row of black blotches.

2. P. punctata, Bl. Mus. Bot. Lugd. Bat. I. p. 32. Orch. Archip. Ind. p. 150. t. 49. f. 2. Base of stem tuberous, one inch long with a few sheaths. Leaf appearing before the leaves ovate or orbicular cordate 1-2 inches long $1\frac{1}{2}$-2 inches wide green, undulate. Flowers solitary nodding on peduncles, 2-3 inches long with close fitting pink spotted sheaths. Bracts shorter than the very short pedicel ovate. Ovary nearly $\frac{1}{2}$ inch long purple. Sepals an inch long narrow linear acuminate pinkish with dark spots. Petals similar. Lip white with violet spots 3 lobed, side lobes short midlobe lanceolate shorter than the sepals. Column tall with broad thin wings tapering upwards, arms winglike ovate acuminate points pointed downwards. Anther small hemispheric pink. Stigma large. Ridley Journ. As. Soc. Straits Branch Vol. 23. p. 146.

Singapore: Bukit Timah, Chua Chu Kang (Ridley); Penang Waterfall (Curtis); Lankawi: Terutau and Kwah (Curtis 2809).

66. Corysanthes, Br.

Very small tuberous herbs, with one orbicular or ovate leaf, and one large flower. Dorsal sepal falcate broad laterals and petals filiform or petals absent. Lip large erect with a tubular base dilated into a broad recurved limb. Column short erect stout with a broad stigma. Anther 2 celled reniform or ovoid not beaked. Pollinia 2 elliptic with no caudicle or disc. Rostellum short and broad. Capsule erect elliptic on a long succulent pedicel.

Species 15. Australian, Malayan and Indian.
Lateral sepals and petals filiform long.

Lip broad rounded	1. *C. picta.*
Lip ovate acuminate	2. *C. mucronata.*
Sepals and petals shorter than lip	3. *C. fornicata.*

1. C. picta, Lindl. Gen. and Sp. Orch. Pl. 394. Whole plant 3 inches tall. Leaf cordate acute undulate dark green with white veins ½ inch long. Flowers deep red ½ inch long. Upper sepal cuneate 3 toothed. Lateral sepals and petals 1½ inch long very slender. Lip ovate with a tubular base recurved, margin of limb toothed. Column short and broad. Capsule elliptic. Blume Orch. Arch. Ind. 174. t. 64. fi. Hook. fil. Fl. Brit. Ind. VI. 118. *Calcearia picta,* Bl. Bijdr. t. 33. part.

Pahang: Kluang Terbang (Barnes); Malacca: Mount Ophir (Ridley); Perak: Tambak Batak (Scortechini). Blume's figure in the Orchideae Archipelagi Indici is coloured violet, and looks very different from the peninsular species which may be distinct.

2. C. mucronata, Bl. Orch. Arch. Ind. 175. t. 66. C. Whole plant 2 inches tall. Leaf ovate cordate ½ inch long. Flower less than half an inch sessile red with darker spots. Upper sepal entire or nearly so mucronate. Lateral sepals and petals 1 inch long. Lip white with red spots, much smaller than in preceding species, base tubular limb ovate denticulate. Capsule elliptic ¼ inch long, pedicel 3 inches long.

Kedah: Gunong Jerai (Ridley). Distrib. Java.

3. C. fornicata, Lindl. Gen. and Sp. Orch. Pl. 394. Stem ½-2 inches. Leaf ½-⅔ inch long ovate cordate margin not waved. Flowers sessile. Bracts subacute lanceolate. Dorsal sepal ⅔ inch long blade spathulate 5 ribbed rose coloured, lateral sepals and petals shorter than the upper sepal. Lip with a long erect tube produced downwards into two spurs, limb fanshaped with short blackish purple ribs.

Blume Orch. Arch. Ind. 175. t. 64. fig. 2. Hook. fil. Fl. Brit. Ind. VI. 118. *Calcearia fornicata,* Bl. Bijdr. 417. t. 33.

Perak: Gunong Enar and Tambak Batak (Scortechini). Distrib. Java. These little plants are to be found in wet moss usually at about an altitude of 3-4000 feet. The pedicel of the capsule elongates as it ripens to a considerable length as in *Didymoplexis.*

67. Aphyllorchis, Bl.

Leafless saprophytes, with long roots. Raceme long lax, flowers mediocre to small white or yellow. Bracts broad deflexed. Sepals and petals subsimilar or the latter, narrower or broader. Lip entire or 3 lobed without calli free from the column. Column slender footless with no wings or arms. Anther capshaped 2 celled. Pollinia 2 hemispheric or subpyriform with no caudicle or viscus. Rostellum entire.

Species 4 or 5. Indian and Malayan.

Stem tall. Flowers an inch across ..	.. 1. *A. striata.*
Stem short. Flowers ½ inch wide ..	.. 2. *A. pallida.*

1. A. striata, Ridl. *Pogonia striata,* Ridl. Trans. Linn. Soc. III. 377. Stem about 3 feet tall, white with violet streaks stout, sheaths numerous with acuminate points. Bracts deflexed ⅓ inch long lanceolate. Flowers about 12 pedicel and ovary ½ inch long. Sepals half an inch long lanceolate acute white streaked violet. Petals broader ovate white. Lip narrow lanceolate acute white a purple median line. Column violet, apex and anther yellow. Anther rounded. Pollinia hemispheric. Rostellum elongate triangular. Stigma broad. Capsule pendulous cylindric 1 inch long.

Pahang: Tahan Woods (Ridley); Johor: Gunong Banang, Batu Pahat (Ridley). Endemic. Allied to *A. montana,* Rchb. fil. Rare only two specimens found.

2. A. pallida, Bl. Bijdr. t. 77. Mus. Bot. Lugd. Bat. I. p. 30. Orch. Arch. Ind. p. 52. t. 13. Stems solitary 10-18 inches tall slender yellow spotted purple with long stout roots. Sheaths numerous limb bluntly lanceolate. Raceme lax 3-4 inches long, many flowered. Bracts oblong ovate, blunt ⅛-¼ inch long. Ovary and pedicel ½ inch long slender yellow dotted purple. Sepals ¼ inch long oblong obtuse, laterals deflexed straw colour. Petals narrower lanceolate acute. Lip paler, about as long ovate obtuse side erect. Column straight stout hooded. Anther conic. Pollinia 2 reniform grooved.

Singapore: Tanglin, Bukit Timah (Ridley 8127); Pahang: Tahan River at Kwala Tenok (Ridley); Perak: Bujong Malacca (Ridley), Larut Hills at 4300 feet alt. (Fox), Batang Padang (Wray

1477); Penang (King's Collector 1861). Distrib. Java. In rather dry parts of woods, often on jungle tracks.

68. Didymoplexis, Griff.

Succulent leafless saprophytes, rhizome cylindric. Stem short deeply sunk in the ground. Flowers small racemose. Upper sepal and petals connate apices free, laterals sepals connate a short mentum. Lip inserted on the column foot short broad entire. Column long two winged, with two short erect arms. Anther ovate low shortly stipitate. Pollinia reniform. Capsules elliptic on very long succulent pedicels much longer than the stem.

Species 2-3. Indian, Malayan and Oceanic.

D. pallens, Griff. Calc. Journ. Nat. Hist. IV. 383. t. 17. Rhizome ½-3 inches long. Stem 3-6 inches long. Racemes few flowered. Flowers ¼ inch long pinkish or yellowish white. Bracts small ovate. Upper sepal oblong ovate obtues. Petals shorter lateral sepals united half way, apices blunt. Lip cuneate oblong papillose. Capsule half to 1½ inch long, pedicel 6 to 12 inches long. King. Ann. Bot. Gard. Calc. VIII. p. 260. Pl. 346. Hemsley Journ. Linn. Soc. XX. 311. t. 28. Kurz. Journ. Bot. 1866. 40. Hook. fil. Fl. Brit. Ind. VI. 122. *Leucorchis sylvatica,* Bl. Mus. Bot. I. 31. Orch. Arch. Ind. 147. *Apetalon minutum,* Wight. Ic. t. 1758. *Arethusa ecristata,* Griff. Notul. III. 378. Ic. Pl. Asiat. t. 343. 344. *Epiphanes pallens,* Rchb. fil. Seem. Fl. Vit. 296.

Singapore: Bukit Timah, Chan Chu Kang, etc. (Ridley); Johor: Gunong Panti (Ridley); Perak (Scortechini), (Wray 3588); Kedah: Gunong Jerai (Ridley); Penang: Richmond Pool (Ridley). Distrib. India, Java, Christmas Island.

69. Lecanorchis, Bl.

Leafless saprophyte with wiry black stems, roots elongate fusiform. Raceme few flowered, rarely branched. Flowers thin ovary slender terminated by a toothed cup. Sepals and petals subequal. Lip adnate for most of its length to the column as long as the sepals spurless. Column slender dilated upwards. Anther oblong 2 celled terminal. Pollinia 2 elliptic granular with no caudicle.

Species 3. Malayan and Japanese.

L. malaccensis, Ridley Trans. Linn. Soc. II. iii. 377. t. 65. Stems solitary or several 8 inches to nearly 2 feet tall, slender, with a few sheaths often branched. Flowers an inch long pale flesh colour or yellowish white. Sepals lanceolate spathulate. Petals similar, all connivent. Lip blade spathulate bearded yellow with 2 low keels from the base to the limb. Column slender. Rostellum absent. Anther broad. Capsule long narrow terminated by the cup black an inch long.

Singapore: Bukit Timah, Bajau (Ridley); Johor: Pengaram, Bukit Tenabang (Kelsall); Pahang: Sungei Tahan (Ridley); Malacca: Lower slopes of Mount Ophir (Ridley), Bukit Sadanen (Derry 342); Negri Sembilan: Gunong Angsi (Ridley); Kedah: Gunong Jerai (Ridley 3126); Pahang: Government Hill (Ridley). Distrib. Borneo, Siam. Not rare in dry woods, very inconspicuous.

70. Gastrodia, Br.

Leafless saprophytes with a cylindric rhizome and a solitary succulent brownish stem. Flowers in lax racemes. Sepals and petals connate into a tube more or less split. Lip short adnate to the foot of the column and perianth, entire or obscurely 3 lobed. Column usually long 2 winged foot short or 0 arms short erect. Rostellum small. Anther hemispheric. Pollinia in two granular masses.

Species 8. India, Malaya, Japan, China, Australia.

Stem tall, perianth cleft nearly to base ..	1. *G. Malayana.*
Stem short, perianth campanulate	2. *G. Hasselti.*

1. G. Malayana, Ridl. Rhizome cylindric 6 inches long ringed, ½ inch through. Stem stout 9 inches tall purplish brown, ringed at the base, with short sheaths with ovate blades. Raceme few flowered. Flowers shortly pedicelled, ovary short conical. Bracts ovate ¼ inch long. Upper sepal lanceolate lorate blunt, laterals prolonged into a short mentum, apices pustular purple brown, mentum green. Petals lorate obtuse free to near the base, green and purplish. Lip base narrow linear, margins rolled in, plicate, cuneate subtrilobed, side lobes broad blunt, midlobe narrow straight blunt orange yellow, with a raised central bar. Column semiterete broadly grooved, foot long. Anther conical broad. Pollinia mealy. Rostellum flat broad entire. Capsule 1 inch long elliptic, pedicel ¼ inch.

Singapore: Bukit Timah, Pulau Damar, Seletar (Ridley); Johor: Sungei Tebrau (Ridley). Grows on rotten wood. Rare and difficult to find, often growing in rotten wood, in dense forests. This plant I took for *G. javanica,* Bl. but it differs in the form of the perianth of which the parts are nearly free to the base, and the lip is more blunt and broader

2. G. Hasseltii, Bl. Mus. Bot. II. 175. Orch. Arch. Ind. 145. t. 52. f. 5-8. A small plant 6 inches tall. Bracts ovate lanceolate. Flowers 3-4 broadly campanulate ½ inch long. Sepals and petals all adnate. Lip free, claw narrow, limb suborbicular with apex truncate. Hook. fil. Fl. Brit. Ind. VI. 123.

Perak (Drawing by Scortechini). This is only known as a native of the Peninsula from Scortechini's sketch which certainly resembles Blume's figure.

71. Corymbis, Thouars.

Tall terrestrial plants with leafy stems. Leaves plicate broad Flowers white in short sessile axillary panicles. Sepals and petals narrow linear spathulate, at first cohering in a tube with spreading tips. Lip linear spathulate erect from the column base. Column as long as the petals, erect terete with two ears at the apex. Anther lanceolate acuminate. Pollinia 2 narrowly pyriform on a linear caudicle with an ovate disc. Rostellum shortly bifid. Capsule fusiform, with the persistent column.

Species 5 or 6 described, all closely allied, and possibly nearly all one species. Africa, India, Malaya and Australia.

C. longiflora, Hook. fil. Fl. Brit. Ind. VI. 92. Stem 6 to 10 feet tall slender, with large roots. Leaves broadly lanceolate to ovate lanceolate, deep green. Panicle 3 inches long flowers white fragrant. Bracts ovate acuminate ¼ inch long. Ovary erect ½ inch long. Petals and sepals linear spathulate acuminate 2 inches long, edges of petals crisped. Lip nearly as long spathulate claw tubular. Column shorter. Anther brown cuneate. Capsule an inch long subtriangular with waved ridges when ripe. *C. rhytidocarpa,* Hook. fil. l.c. p. 92.

Singapore: Pulau Ubin (Ridley 2037). Chan Chu Kang (Ridley 6756); Malacca: Selandor (Native Coll.); Perak: Larut Hills (King's Coll. 6988), (Wray 490 and 3907), Batang Padang (King's Coll. 8014, 7925), Kuram Valley (Curtis); Dindings: Gunong Tungul (Ridley); Selangor: Kwala Lumpur Caves (Ridley 8128). Native Name "Lulumba Paya." In forests. Only differs from *C. ceratrifolia,* Bl. in the proportions of the flower and the undulation of the ribs of the fruit.

C. brevistylis, Hook. fil. Fl. Brit. Ind. Vol. VI. 91. Stem 1 to 2 feet slender. Leaves elliptic acuminate subpetioled, 7 nerved 5-6 inches long, 2-3 inches broad. Panicles few flowered. Column ⅓ inch long. Fruit 1 inch long.

Perak: Kwala Dipang on limestone rocks (King's Collector 8248). Endemic.

72. Tropidia, Bl.

Stems erect wiry, leafy. Leaves lanceolate acuminate. Panicles or racemes short axillary or terminal. Flowers small green or white. Sepals and petals subequal connivent. Lip entire saccatte at base. Column short. Anther lanceolate. Pollinia 4 elongate pyriform with a long slender caudicle and ovate disc. Rostellum triangular bifid. Capsule cylindric.

Species 6 to 7. Indian, Malayan, Chinese.

Flower spikes sessile. Bracts short .. 1. *T. squamata.*
Flower spikes peduncled. Bracts long .. 2. *T. Maingayi.*
Flower spike terminal dense, peduncled .. 3. *T. angulosa.*

1. T. SQUAMATA, Bl. Orch. Arch. Ind. p. 123. t. 41. Stems slender about a foot or 18 inches tall. Leaves lanceolate acuminate plicate variable, 6-8 inches long 1-1½ inch wide. Racemes axillary or subterminal ½ inch long, crowded with broad ovate ribbed bracts. Flowers ¼ inch long greenish-white, scented. Sepals lanceolate falcate. Petals narrower linear falcate. Lip saccate tip lanceolate. Anther lanceolate acuminate. Pollinia elongate pyriform. *T. graminea,* Hook. fil. Fl. Brit. Ind. XXXII. 63.

Singapore: Bukit Timah, Bukit Mandai, Chua Chu Kang (Ridley 8786); Johor: Batu Pahat (Ridley); Malacca: Mount Ophir (Griffith), (Ridley 3132); Selangor: Ginting Bidai (Ridley 7784), Bukit Hitam (Kelsall); Perak: Larut Hills (Ridley 5195), (Wray 3227); Kedah: Gunong Jerai (Ridley 5129). Distrib. Borneo. Not rare but seldom found in flower. Dense woods to about 3000 feet alt. Flowers are scented of vannila.

2. T. MAINGAYI, Hook. fil. Fl. Brit. Ind. VI. 93. Stem 12-18 inches long. Leaves elliptic lanceolate acuminate. Spikes terminal and axillary. Peduncle 1½-2 inches long flexuous sheaths. Bracts variable lower ones 1½ inch long. Flowers ¼ inch long. Sepals oblong ovate acute. Petals obliquely oblong. Lip with median and intramarginal lamellae from the base to the acute tip.

Malacca: Mount Ophir (Maingay).

3. T. ANGULOSA, Bl. Orch. Arch. Ind. 122. Stem slender branched 8-12 inches long. Leaves 2 or 3 terminal broad ovate acuminate many nerved base rounded 3-5 inches long, 1-3 inches wide. Spike terminal dense, peduncled 3-4 inches long. Bracts ½-¾ inch long narrow. Flowers nearly ¾ inch long greenish white. Upper sepal linear lanceolate acute, laterals lanceolate connate to near the acuminate tips. Petals narrower, blunt. Lip oblong ovate blunt, two lamellate nerves in the centre, base spurred. Column shorter than the long narrow acuminate rostellum. Anther lanceolate acuminate. Pollinia clubbed with a long caudicle and linear gland. Capsule ½ inch long. Hook. fil. Fl. Brit. Ind. VI. 92. King Ann. Roy. Bot. Gard. Calc. VIII. 275. Pl. 365. *T. Govindovii, T. semilibera,* Bl. l.c.c. *Cnemidia angulosa* and *C. semilibera,* Lindl. Gen. and Sp. Orch. Pl. 463. *Govindovia nervosa,* Wight. Ic. t. 2090.

Perak: Ipoh (Curtis) rare. Distrib. India, Burmah.

73. Physurus, Richard.

Terrestrial herbs with ovate or lanceolate petiolate leaves, and terminal spike of pubescent or hairy small flowers. Petals adnate to upper sepal or free. Lip short almost oblong or quite entire, with a spur cylindric usually clubbed, and bifid at the tip. Column very short. Anther long-beaked. Pollinia 2 elongate pyriform on a small disc. Rostellum arms long erect.

Species about 20, two or three. Indo Malayan the rest American.

Ph. latifolius, Bl. Orch. Arch. Ind. p. 95. Pl. 27. Stem about 8 inches long. Leaves distant ovate acute 3 inches long by two wide with 5 conspicuous veins petiole 1 inch long. Scape 18 inches long base nude with a few acuminate sheaths pubescent, racemose portion 6-7 inches. Flowers numerous crowded erect sessile. Bracts lanceolate acuminate hisped, as long as the ovary. Sepals hairy $\frac{1}{8}$ inch long lanceolate obtuse. Petals adnate to upper thin linear spathulate. Lip shorter oblong obtuse entire with 5 sinuate veins on the disc, spur $\frac{1}{2}$ the length of the ovary curved clubbed apex bifid. Anther very long acuminate, rostellum deply bifid with long linear acuminate lobes. Ovary hairy. Capsule elliptic $\frac{1}{2}$ inch long.

Perak: Larut Hills (Curtis). Distrib. Java.

74. Vrydagzynea, Blume.

Small herbs with an ascending stem. Leaves ovate or lanceolate petioled. Flowers small spicate erect. Sepals and petals connivent. Lip entire short, spur rather long pendulous with two pedicelled glands, (rudiments of the two lower stigmata) inside. Column short, with thick arms erect. Anther ovate. Pollinia thick club-shaped on a large disc. Capsule ovoid.

Species 5 or 6. Indo-Malayan.

Spike peduncled longer than the leaves ..	1. *V. lancifolia.*
Spike nearly sessile conic short.	
Leaves lanceolate acute green	2. *V. albida.*
Leaves ovate olive with pink stripes ..	3. *V. tristriata.*

1. V. lancifolia, Ridl. Journ. Linn. Soc. XXXII. 398. Stem 6 to 9 inches tall erect, rhizome long. Leaves lanceolate acute oblique 1½-3 inches long ¼ to ¾ inch wide petiole ¼-½ inch long. Peduncle variable usually rather long, raceme densely cylindric. Flowers glabrous or glandular pubescent white tipped with pink. Bracts lanceolate acuminate ⅛ inch long. Sepals lanceolate laterals falcate broader. Petals shorter adhering to the upper sepal. Lip much shorter oblong obtuse, sides involute spur subcylindric obtuse glands globose

on short free pedicels. Column arms short broad. Anther bluntly ovoid. Pollinia short and thick. Capsule ovoid nearly ½ inch long.

Singapore: Bukit Timah (Ridley 1686, 2033, 3927, 6905); Johor: Batu Pahat, Gunong Panti (Ridley); Perak (Scortechini 1417).

2. V. ALBIDA, Bl. Orch. Arch. Ind. Pl. 75. t. 19. f. 2. Stem 3-4 inches long. Leaves tufted at the top lanceolate acute undulate green 3 inches long by ½ inch wide, petiole ¼ inch long. Spike very dense conic almost sessile, an inch long. Bracts lanceolate acuminate glandular pubescent longer than the ovary. Flowers numerous small, green and purplish at the base white above withering yellow, fragrant. Upper sepal and petals narrow lanceolate obtuse, lateral sepals with a gibbous base. Lip narrow, shorter, glabrous oblong lanceolate obtuse edges incurved spur swollen in the middle tapering to the point with two short clubbed glands (stigmata). Column short and thick arms erect short blunt. Anther ovate. Pollinia 2 thick clubbed with a large shield-shaped disc. Hook. fil. Fl. Brit. Ind. VI. p. 96. *Etaeria albida,* Bl. Bijdr. 410. Lindl. Gen. and Sp. Orch. Pl. 491.

Singapore: Chua Chu Kang, Bukit Mandai, Bukit Timah (Ridley 6906); Johor: Batu Pahat (Ridley); Perak: Batang Padang (Wray). Distrib. Java. Common in damp woods by streams.

3. V. TRISTIATA, Ridley Journ. Linn. Soc. XXXII. 398. Stem 6 inches long. Leaves ovate acute 1½ inch long ½ inch wide, olive coloured with three pink stripes. Spikes subsessile shorter than the leaves dense. Bracts lanceolate acuminate reddish. Flowers small white glabrous. Sepals lanceolate oblong, laterals somewhat oblique. Petals adnate to the upper sepal. Lip shorter lanceolate tongue-shaped obtuse, with a pustular cushion in the middle, spur elongate saccate, glands yellow globose pedicelled, adnate to the spur for half its length.

Singapore: Chan Chu Kang in wet woods (Ridley); Perak: Horum (Scortechini *V. gracilis,* Hook. fil.) is also this plant I believe. Endemic.

75. CYSTORCHIS, Bl.

Terrestrial, rarely saprophytic plants. Leaves ovate petioled or absent. Flowers small pubescent. Upper sepal adnate to petals laterals larger. Lip clawed side lobes involute, midlobe distinct or not, base spurred. Column short, stigma broad. Anther ovate. Pollinia 2 deeply grooved on an ovate disc.

Species 3 or 4. Malayan.

Leaves ovate lanceolate	1. *C. variegata.*
Leafless saprophyte	2. *C. aphylla.*

1. C. VARIEGATA, Bl. Orch. Arch. Ind. 89. t. 24. f. 3. and 38. c. Whole plant 6-18 inches tall. Leaves ovate lanceolate acute crisped, olive green with lighter patches 3 inches long 1 inch broad or smaller, petiole 1 inch or less. Inflorescence spicate pubescent. Flowers crowded. Bracts lanceolate acuminate red ½ inch long. Ovary shorter. Upper sepal with petals oblong lanceolate, laterals oblong elliptic. Sepals green petals white, with an orange transverse bar pubescent. Lip as long, side lobes involute orange, midlobe ovate narrowed at the base, white. Hook. fil. Fl. Brit. Ind. VI. 97.

Singapore: Kranji, Chan Chu Kang (Ridley 371); Johor: Gunong Panti (Ridley); Selangor: Kwala Selangor (Ridley), Negri Sembilan (Ridley 10014); Pahang: Tahan River (Ridley); Perak (Scortechini); Batu Kurau (Curtis); Kedah: Gunong Jerai (Ridley).

var. *purpurea* Ridley. *C. javanica,* Bl. l.c. p. 87. Hook. fil. l.c.c. *Hetaeria javanica,* Bl. Bijdr. p. 410. Lindl. Gen. and Sp. Orch. Pl. 491. *(Aetheria).* Leaves deep purple, usually a small plant.

Singapore. Chua Chu Kang (Ridley); Pahang: Tahan Woods (Ridley). Distrib. Java, Borneo.

2. C. APHYLLA, Ridl. Journ. Linn. Soc. XXX. 400. A saprophyte 6 inches tall, with thick roots, leafless. Stems covered with ovate acuminate sheaths. Flowers 4 or 5 in a short terminal spike. Bracts lanceolate acuminate acute, shorter than the ovary. Sepals lanceolate acuminate ¼ inch long. Petals shorter and narrower. Lip lanceolate base saccate, side lobes involute hardly distinct, midlobe blunt. Anther ovate beaked curved upwards. Rostellum absent.

Malacca: Merlimau (Ridley); Selangor: Pahang Track (Ridley 8780). Endemic.

76. ANAECTOCHILUS, Blume.

Terrestrial herbs, with ascending stem, and ovate or lanceolate leaves petioled. Spikes glandular pubescent. Flowers medium or small. Upper sepals adnate to petals forming a hood laterals spreading. Lip adnate to the base of the column, base saccate or spurred, side lobes erect or spreading, midlobe clawed, the claw often pectinate, blade broadly bilobed lobes divaricate or nearly entire rounded. Column short with two appendages or wings in front. Anther lanceolate. Pollinia clubbed on a shield-shaped disc. Rostellum bifid long. Stigmata 2 pustular on either side of the rostellum.

Species about 20. Indo Malayan and Chinese. This genus as now emended includes *Odontochilus,* Bl. and *Myrmechis,* Bl.

Claw of midlobe of lip fimbriate.
Leaves brown with gold reticulations. Flowers few.
Spur entire, claw of lip horizontal .. 1. *A. Reinwardtii.*
Spur entire, claw geniculate .. .. 2. *A. geniculata.*
Spur bifid at apex .. .. 3. *A. brevilabris.*
Leaves green. Flowers numerous .. .. 4. *A. pectinatus.*
Claw of midlobe toothed .. .. .. 5. *A. brevistylis.*
Claw crenulate .. .. 6. *A. calcaratus.*
Flowers large solitary or 2. Lip spathulate .. 7. *A. macranthus.*

1. A. Reinwardtii, Bl. Orch. Arch. Ind. 48. t. 12. f. 2. Stem 1-2 inches long. Leaves orbicular or ovate deep purple brown reticulated gold, 1-2 inches long 1 inch across. Scape 4-6 inches tall with 3 or 4 flowers at the top, pubescent, bracts lanceolate half an inch long reddish. Sepals dull red pubescent upper one greenish attached to the white petals half inch long, laterals ovate lanceolate. Lip straight white spur horizontal with two masses of papillae inside, claw narrow with numerous slender filaments, blade narrowly transversely oblong, lobes rounded with an intermediate tooth. Anther ovate lanceolate. Hook. fil. Fl. Brit. Ind. VI. 95. Belg. Hort. 1861. t. 18.

Perak: Larut Hills (Ridley, Scortechini); Kedah: Gunong Jerai (Ridley). Distrib. Java, Sumatra.

2. A. geleiculata, Ridl. Journ. Linn. Soc. XXXII. 406. Stem and leaves resembling those of the preceding. Flowers as large, lateral sepals gibbous at the base. Lip base narrow erect parallel to the column, then abruptly deflexed forming a knee, white with two red spots below the knee claw of midlobe with 18 filaments, lobes obcuneate erect truncate, spur $\frac{3}{4}$ inch long curved oblong laterally compressed with two ovoid papillose calli inside. Anther elongate acuminate. Pollinia clubbed long.

Singapore: Bukit Timah, Selangor (Ridley); Johor: Gunong Panti (Ridley); Malacca: Mount Ophir (Ridley 3146); Penang: West Hill (Curtis 1063). These two plants grow in dead leaves in forests and are called Bunga Tulis by Malays. Endemic.

3. A. brevilabris, Lindl. Gen. and Sp. Orch. Pl. 499. Whole plant about 6 inches tall. Leaves ovate oblique $1\frac{1}{2}$ inch long $\frac{1}{2}$ inch wide, deep purple netted with gold, with a brown pale bar down the centre, petiole short $\frac{1}{4}$ inch. Scape thick reddish. Flowers about 8. Sepals reddish or dark brownish red, pubescent. Petals adnate to upper sepal thin white. Lip white horizontal, claw short with a pair of oblong calli at the base, filaments few 6-8 on each side, limb

of two short oblong truncate lobes. Spur curved rather long, apex bifid. Column with broad triangular wings and a fork process from the centre. Anther ovate pubescent. Pollinia curved pyriform on a slender caudicle. Hook. fil. Fl. Brit. Ind. VI. 96. *A. albo-lineatus*, Par. and Rchb. fil. Trans. Linn. Soc. XXX. 141.

Selangor: Bukit Hitam (Kelsall); Perak: Taiping (Derry). Distrib. India and Burmah. I believe this is not rare in the Peninsula but I have seldom seen flowers.

4. A. PECTINATUS, Ridl. *Odontochilus pectinatus*, Hook. fil. Fl. Brit. Ind. VI. 99. Ic. Pl. 2165. Stem tall a foot long, internodes an inch long. Leaves crowded above ovate oblique 3 inches long by 1 wide or less, green, petiole half an inch. Spike 2 inches long, nude below. Flowers ½ an inch long about 10. Bracts lanceolate nearly as long as the ovary pubescent. Upper sepal and petals adnate ovate pubescent, laterals ovate hardly gibbous at the base, green. Lip much longer white base saccate with two curved clubbed processes inside, side lobes short rounded, claw of midlobe long with numerous short filaments limb bilobed lobes falcate obtuse. Column short wings triangular, stigma 2 papillose. Anther long acuminate. Pollinia obovoid on a single stout caudicle with an ovate disc.

Perak: Larut Hills (King's Collector 6398, 2137), (Ridley 5195). Endemic.

5. A. BREVISTYLIS, Ridl. *Odontochilus brevistylis*, Hook. fil. Fl. Brit. Ind. VI. 100. Ic. Pl. 2166. Stem tall about 6 inches long. Leaves few at the top ovate acuminate 1½-2 inches long petiole ¼-½ inch long. Peduncle 1 inch long pubescent. Flowers 3-4 ½ an inch long white. Bracts lanceolate. Upper sepal ovate, laterals larger oblique ovate with a tuft of hairs at the tip. Petals semiovate, beaked. Lip ⅜ inch long, base saccate, side lobes hardly distinct claw with 3 or 4 falcate teeth, limb bifid lobes semiovate rounded. Anther ovate, pollinia ovoid on a broad triangular caudicle with a small oblong gland.

Perak: Gunong Batu Putih (Wray 1210). Endemic.

6. A. CALCARATUS, Ridl. *Odontochilus calcaratus*, Hook. fil. Fl. Brit. Ind. XII p. 90. Ic. Pl. 2162. A very slender plant 2 to 5 inches tall. Leaves ovate sessile or shortly petioled ¼-½ inch long, brown (green dashed with crimson and veined gold, Wray) dark purple (Scortechini). Flowers 2 or 3, ½ inch across white. Sepals lanceolate connate at the base into a mentum. Petals linear lanceolate free. Lip base saccate spurred, side lobes curved, claw crenulate, limb lobes quadrate truncate. Column with a bifid elongate process descending into the spur. Anther ovate lanceolate, pollinia pyriform with two stout caudicles and an ovate disc.

Perak (Scortechini 1339), (Wray), Hermitage Hill on a rock (Ridley). Endemic.

7. A. MACRANTHUS, Ridl. *Odontochilus macranthus,* Hook. fil. Fl. Brit. Ind. VI. 98. Ic. Pl. 2161. Stem nodose ascending about 5 inches long. Leaves lanceolate petiole 1 inch long by ½ inch wide or much less. Flowers 1 or 2 terminal ¾ inch long white sessile. Bracts leaf-like lanceolate, ½ inch long. Upper sepal lanceolate obtuse, adnate to the semiovate petals, laterals lanceolate gibbous at base. Lip spathulate sides involute base saccate with two small processes at the base, terminal lobes rounded crenulate. Column short with two processes. Anther long lanceolate acuminate. Pollinia clubbed with a slender base disc long. Capsule ovoid acuminate sessile an inch long.

Perak: Larut Hills (Scortechini, Curtis). Very near if not identical with *Cystopus Hasselti,* Bl.

77. DOSSINIA, Morren.

Terrestrial herbs, leaves ovate petioled. Scape tall flowers small. Upper sepals adnate to the petals laterals free. Lip adnate to base of column base saccate with two glands inside side lobes short, midlobe clawed apex dilated. Column short with a boat-shaped process in front, projecting into the lip sac. Anther acuminate. Pollinia 2 on a single caudicle. Rostellum bifid.

Species 1. Malayan.

D. MARMORATA, Morren, Ann. Bot. Gaud. IV. 171. t. 195. Stem ascending. Leaves ovate or ovate elliptic 2-3½ inches long 1¾-2½ inch wide deep velvety green marbled and veined with lighter green, petiole short broadly sheathed reddish. Scape a foot or more pubescent. Flowers long numerous. Bracts lanceolate acuminte. Sepals pink ovate, laterals larger falcate. Lip longer white apex bilobed.

Perak: Telok Bahang (Curtis). Distrib. Borneo.

78. MACODES, Lindl.

Terrestrial herbs with a short stem, leaves ovate petioled. Spike tall pubescent. Flowers small. Bracts lanceolate. Sepals and petals free connivent. Lip saccate 3 lobed spurless, with two calli at the base. Column short thick. Anther elongate 2 celled. Pollinia elongate long stalked with a very small disc. Rostellum bilobed lobes very long curved. Two very large curved laminae on the column below the stigma.

Species 2. Malayan.

M. PETOLA, Lindl. Gen. and Sp. Orch. Pl. p. 497. Stem ascending glabrous. Leaves ovate petiolate 2 inches long 1¼ inch wide, acute,

dark green reticulated with gold, petiole ¼ inch long. Flowering stem 2-6 inches long pubescent. Flowers about 12, small pubescent. Bracts lanceolate as long as the ovary. Sepals lanceolate blunt reddish glandular pubescent. Petals linear shorter and narrower glabrous. Lip as long pandurate twisted, side lobes curved up rounded midlobe narrow spathulate blunt, with 2 rather large fleshy hooks at the base of the lip. Column short with two large parallel laminae below the stigma. Anther elongate lanceolate beaked 2 celled. Pollinia long and narrow long stalked ⅛ inch long. Blume Orch. Arch. Ind. 119. t. 31. f. 2. t. 36 D. Rchb. fil. Xenia. Orch. II. 96. Miq. Choix. des Plantes XVII. fig. 1 *Neottia Petola,* Bl. Bijdr. 407. fig. 2.

Singapore: Chua Chu Kang (Ridley); Johor: Gunong Panti (Ridley); Selangor: Pahang Track (Ridley); Malacca: Mount Ophir (Ridley); Perak: Gunong Keledang (Goldham); Kedah: Gunong Jerai (Ridley 5132). Distrib. Java, Lingga.

79. Haemaria, Lindl.

Creeping herbs, with ovate or lanceolate petioled leaves. Flowers fairly large, racemed, white. Upper sepal adnate to petals, forming a large ovate galea lateral sepals oblong ovate spreading. Lip spurless saccate adnate to sides and base of the column, midlobe bilobed. Column dilate upwards. Anther ovate acuminate 2 celled. Pollinia long narrow pyriform.

Species 1 or 2. Malayan and Chinese.

H. discolor, Lindl. Gen. and Sp. Orch. Pl. 490. Stem 4-12 inches tall, fleshy. Leaves ovate or lanceolate acute 1-3 inches long ¾-1½ broad deep velvety brown with pink midrib and 2 outer veins. Spike 3-8 inches tall white pubescent. Bracts lanceolate acuminate ½ inch long. Ovary and pedicel white woolly ¾ inch long. Flowers fragrant white. Lip twisted side lobes short rounded erect, base saccate with 2 small glands, midlobe broadly oblong, lobes divaricate. Anther yellow. Miq. Chox. Pl. t. 16. Hook. fil. Fl. Brit. Ind. VI. 101. *Ludisia discolor,* Rich. Dict. Class Nat. Hist. VI. 457. Blume Orch. Arch. Ind. 113, 114. t. 34. f. 2, 3 and t. 42. *Goodyera discolor,* Ker Bot. Reg. t. 271. Bot. Mag. 2055. Lodd. Bot. Calc. t. 143. *Myoda rufescens,* Lindl. Gen. and Sp. Orch. Pl. 489. *Anoectochilus Dawsonianus,* Low Gard. Chron. 1868. 1038.

Pulau Tiuman, Pulau Aor, Pulau Tinggi (Ridley); Penang Hill (Wallich 7390), Pulau Betong (Curtis).

var. *Ordiana,* Williams. Leaves green with golden veins. var. *Otletae, H. otletae,* Rolfe. Ill. Hort. XXXVIII. p. 31. t. 124. with narrow leaves, occurs in the Pulau Tiuman group of Islands. Distrib. Cochin China, Hongkong. Native name "Daun Low." The plant usually grows on the bare rocks in streams.

80. ZEUXINE, Lindl.

Terrestrial herbs, stem shortly creeping. Leaves linear lanceolate to ovate. Flowers small spicate. Sepals subequal, dorsal forming a hood with the petals. Lip adnate to the column saccate with calli inside, apex not dilated. Column very short with lamellar or conical processes on the front. Stigmas 2 distinct. Pollinia pyriform with an oblong gland.

Species about 15. Tropical Asiatic and African.

Leaves linear sessile	1. *Z. sulcata.*
Leaves ovate or lanceolate.	
Lip midlobe bilobed, not clawed.	
Flowers ¼ inch long, lip yellow	2. *Z. affinis.*
Flowers very small	3. *Z. clandestina.*
Lip midlobe with a denticulate claw ..	4. *Z. rupestris.*
Lip midlobe entire rounded	5. *Z. violascens.*
Lip midlobe reniform	6. *Z. reniformis.*

1. Z. SULCATA, Lindl. Gen. and Sp. Orch. Pl. 485. Stem erect 2-16 inches tall. Leaves narrow linear lanceolate acuminate 1-2 inches long ⅛ inch wide. Raceme nearly sessile dense, subglabrous. Bracts lanceolate acuminate ¼-½ inch long. Flowers white, yellow or pink. Sepals ⅙ inch long oblong obtuse. Petals similar. Lip yellow boat-shaped with a short pubescent claw ending in a hammer headed or bilobed limb. Column short, rostellum short. Anther ovoid pollinia pyriform ovoid on a broad ovoid caudicle and small disc. Capsule ¼ inch long. Lindl. Journ. Linn. Soc. I. 186. Griff. Notulae III. 396. Ic. Pl. As. t. 349. Blume Orch. Arch. Ind. 67. Miq. Flor. Ind. Bat. III. 723. Hook. fil. Fl. Brit. Ind. VI. 106. King. Ann. Bot. Gard. Calc. VIII. p. 286. Pl. 381. *Z. bracteata, brevifolia* and *robusta,* Wight. Ic. 1724, 1725, 1726. *Z. membranacea,* Lindl. Gen. and Sp. Orch. Pl. 486. *Z. Tripleura,* Lindl. Journ. Linn. Soc. I. 186. *Z. integerrima,* Lindl. Gen. and Sp. Orch. Pl. 486. Blume Fl. Jav. 55. t. 19. and 23. C. Orch. Arch. Ind. 67. *Z. emarginata,* Lind. Gen. and Sp. l.c. *Z. procumbens,* Bl. Fl. Jav. t. 22. f. 3. and t. 23 B. *Tripleura pallida,* Lindl. Gen. and Sp. 452. *Adenostylis emarginata,* and *integerrima,* Bl. Bijdr. 414. t. 17. *Pterygodium sulcatum,* Roxb. Fl. Ind. III. 452.

Malacca: Sungei Rambai (R. Derry 306). Distrib. India, Malay Islands, China.

2. Z. AFFINIS, Benth. Gen. Plan. t. III. 600. Stem elongate stout, leaves ovate to ovate lanceolate acute 1 inch long ½ inch wide. Scape 6 inches long many flowered pubescent. Flowers ¼ inch long. Upper sepal oblong obtuse, laterals ovate pubescent green. Petals

oblong glabrous. Lip sac broad with two curved processes inside midlobe base narrow, limb bilobed lobes spreading blunt yellow. Column short. Anther longer lanceolate, rostellum arms long narrow. Pollinia pyriform caudicle narrow disc ovate. Hook. fil. Fl. Brit. VI. 108. King Ann. Bot. Gard. Calc. VIII. p. 290. t. 387. *Monochilus affine,* Lindl. Gen. and Sp. Orch. Pl. 487. *Aetheria mollis,* Lindl. Journ. Linn. Soc. I. 184.

Penang: Government Hill (Maingay). Distrib. India.

3. Z. CLANDESTINA, Bl. Orch. Arch. Ind. p. 70. Pl. 39. fig. 4. Plant slender erect about a foot tall. Leaves distant about 5, lanceolate ovate thin green, $1\frac{1}{4}$ inch long by $\frac{3}{8}$ inch wide, petiole $\frac{1}{4}$ inch long. Scape slender hispid 6 inches long, base nude, above spicate with very small flowers. Bracts lanceolate acuminate half as long as the ovary. Upper sepal adnate to petals forming an acute galea, laterals free oblong all green hisped tipped white. Lip saccate at base green with two curved processes in the sac, side lobes involute, terminal lobe white bilobed spreading lobes obtuse. Column short. Anther lanceolate ovate. Rostellum arms long curved. Capsule $\frac{1}{4}$ inch.

Singapore: Garden Jungle (Ridley 8785), Bukit Timah. Distrib. Java. A very inconspicuous little plant occurring in dry woods.

4. Z. RUPESTRIS, Ridl. Journ. Roy. As. Soc. Str. Br. Vol. XXXIX. p. 86. Whole plant 6-8 inches tall slender, leaves few lanceolate narrow blunt $\frac{1}{2}$-$\frac{3}{4}$ inch long $\frac{1}{8}$ inch wide. Scape slender pubescent. Flowers 2, terminal $\frac{1}{4}$ inch long white. Sepals ovate hairy, petals adnate to the upper sepal. Lip base saccate, with two linear subulate processes inside, limb clawed, with a terete, minutely denticulate claw, blade bifid lobes oblong truncate. Column short, rostellum lobes linear blunt incurved. Capsules erect $\frac{1}{4}$ inch long.

Penang: Rocks on Government Hill (Curtis 2823). The long narrow claw of the lip is more like that of an *Anoectochilus.*

5. Z. VIOLASCENS, Ridl. Plant slender 6-10 inches tall. Leaves lanceolate or ovate lanceolate acute $\frac{1}{2}$-1 inch long petiole $\frac{1}{8}$ inch long, purple, with or without a central pink vein. Scape slender pubescent, with scattered acuminate sheaths. Flowers 5 or 6 terminal crowded, white. Bracts narrow lanceolate acuminate $\frac{1}{6}$ inch long. Ovary longer. Sepals oblong obtuse $\frac{1}{6}$ inch long. Petals adnate to the upper sepal. Lip as long as the sepals, base saccate sides involute terminal lobe broader retuse rounded, two short curved processes in the sac. Column short rostellum arms long curved. *Hetaeria purpurascens,* Blume Orch. Arch. Ind. p. 105. Pl. 37. *Psychechilus purpurascens,* Bl. Pl. 9. fig. 3.

Johor: Tanjong Kupang very rare (Ridley). Distrib. Sumatra, Java. Inhabits very wet woods.

6. Z. RENIFORMIS, Hook. fil. Fl. Brit. Ind. VI. p. 107. Ic. Pl. 2173. Stem below the leaves 6-10 inches tall. Leaves ovate lanceolate acuminate 2-3½ inches long base rounded, petiole ½ inch long slender. Scape 2 inches long pubescent. Bracts ⅓ inch long, longer than the ovary. Sepals ¼ inch long ovate subacute glabrous. Petals semiovate. Lip sac hemispheric with 2 toothed calli inside, terminal lobes reniform crenate. Column short 2 winged in front. Rostellum arms trumpet shaped. Anther lanceolate. Pollinia pyriform, on a large cuneate quadrate caudicle with a triangular disc.

Perak (Scortechini 1770).

81. GOODYERA, R. Br.

Terrestrial herbs. Leaves ovate or lanceolate petioled. Flowers small spicate. Upper sepal with petals forming a hood, lateral sepals free. Lip saccate attached to the column, with processes or lamellae inside the sac, apex small acute decurved. Column short. Anther pyriform beaked. Pollinia 2-4 on a disc. Stigma solitary.

Species about 40. Europe, Asia, Mascarene Islands and North America.

Flowers very small, 2 calli in the sac ..	1. *G. gracilis.*
Flowers few large, sac pubescent within.	
Leaves oblong lanceolate. Pollinia 2 ..	2. *G. rubens.*
Leaves ovate. Pollinia 4	3. *G. cordata.*
Flowers few large, sac with 2 digitate processes	4. *G. lanceolata.*

1. G. GRACILIS, Hook. fil. Fl. Brit. Ind. VI. 112. Ic. Pl. 2183. Whole plant 8 to 12 inches tall, stem short. Leaves tufted ovate deep green 1 inch long ¾ inch wide, petiole ¼-½ inch long. Scape tall, with scattered sheathing acuminate bracts, flowers white fragrant in a spike an inch long. Bracts longer than the ovary, acuminate glabrous. Sepals ⅙ inch long linear oblong or lanceolate, laterals gibbous at the base, glabrous. Petals linear lanceolate obtuse. Lip ovate concave shortly beaked with 2 calli at the base and a broad raised ridge in the centre. Column short, arms of rostellum long. Pollinia narrowly pear-shaped narrowed into a short caudicle with a short linear gland.

Perak: Larut Hills at 5000 feet (Scortechini, Ridley, Derry). Endemic.

2. G. RUBENS, Bl. Orch. Arch. Ind. p. 43. Stem tall about 8 inches. Leaves oblong lanceolate, or elliptic acuminate oblique 3-7

inches long 1½-2½ inches wide. Spike 12 inches reddish pubescent. Flowers sessile red, ¼ inch long. Bracts lanceolate subulate longer than the ovary. Sepals obtusely acuminate puberulous. Petals adnate to upper sepal. Lip boat-shaped with a short linear acute limb white villous inside. Column rather long. Anther shorter lanceolate beaked. Pollinia 2 clavate tapering to the small disc. Stigma large, rostellum short bifid. Hook. fil. Fl. Brit. Ind. VI. 111.

Perak: Upper part of Batang Padang Valley (Wray). Distrib. Java, Philippines.

3. G. CORDATA, Hook. fil. Fl. Brit. Ind. VI. 114. Ic. Pl. 2187. Stem very slender ascending. Leaves about 4, ovate acute petioled crisped 1 inch long ¾ inch wide, petiole ¼-½ inch long slender. Scape 3-4 inches long pubescent with 2-3 flowers. Bracts lanceolate acuminate. Flowers ½ inch long dull red. Sepals lanceolate acute acuminate greenish tipped red. Petals adnate to the upper sepal. Lip short oblong subacute saccate, apex recurved with two hairy patches inside at the base. Column short, broad. Anther lanceolate acuminate nearly as long as the lip. Pollinia 4 elongate clubbed with a narrow caudicle and linear gland. Rostellum lanceolate deeply bifid. *Georchis cordata,* Lindl. Gen. and Sp. Orch. 496. Rchb. fil. Gard. Chron. 1897. II. 520.

Penang: Fern Hill, 2500 feet alt. (Ridley, Curtis); Perak (Scortechini drawing 14). Distrib. India. Scortechini's drawing shows 7 or 8 flowers. My specimen and Curtis drawing two only.

4. G. LANCEOLATA, Ridl. Journ. Roy. As. Soc. S. Br. Vol. XXXIX. p. 86. Stem slender 9 inches long. Leaves lanceolate acuminate 1½ inch long nearly ½ inch wide. Scape 3½ inches long pubescent few flowered. Bracts lanceolate acuminate ⅜ inch long, woolly pubescent. Flowers ½ inch long. Sepals lanceolate, laterals oblique, acuminate woolly pubescent reddish. Petals adnate to the upper sepal thin glabrous reddish. Lip base saccate adnate to the column, by the edges glabrous within with a raised central keel, and a tuft of digitate processes on each side, apex of lip acuminate subulate. Column short. Anther very long acuminate. Pollinia ¼ inch long clubbed with a pair of yellow caudicles connate about half way down and a small linear disc. Rostellum long shortly bifid, lobes acute. Stigma large with thin walls.

Selangor: The Gap, Pahang Track (Curtis). A single specimen.

82. HETAERIA, Bl.

Terrestrial herbs, with a short creeping ascending stem, ovate or lanceolate petioled leaves and a slender dense spike or small flowers. Upper sepal usually adnate to petals, pubescent. Lip

generally uppermost (i.e. flower reversed). Lip base boat-shaped with two small calli at the base, apex narrow sides rolled in and often connate forming a tube. Column fairly large, with long rostella arms.

Species about 15. India, Malaya and Pacific. Differs from Zeuxine in the absence of a dilated end to the lip.
Leaves ovate.

Spike 10 inches long, 2 calli in sac of lip ..	1. *H. alta.*
Spike 3-4 inches.	
Flowers very small, calli numerous ..	2. *H. elata.*
Flowers $\frac{1}{8}$ inch long, calli in 2 rows ..	3. *H. nitida.*
Leaves lanceolate, broad, calli 2	4. *H. obliqua.*
Leaves lanceolate $\frac{1}{4}$ inch wide, calli numerous ..	5. *H. parvifolia.*

1. H. ALTA, Ridley (by a misprint *alba*), Journ. Linn. Soc. XXXII. 404. A tall plant nearly two feet high, with long woolly roots. Leaves scattered numerous ovate acuminate acute oblique 4 inches long $1\frac{3}{4}$ inch wide, petiole an inch long, sheaths large ampliate. Spike 10 inches long pubescent. Flowers yellow glabrous. Bracts lanceolate acuminate $\frac{1}{4}$ inch long ovary $\frac{3}{4}$ inch long pubescent. Sepals lanceolate obtuse glabrous. Petals free as long. Lip shorter base boat-shaped, with two linear calli inside, blade lanceolate sides involute. Column short. Anther lanceolate linear. Column arms large obliquely cuneate oblong. Rostellum lobes shorter than anther lanceolate linear. Capsule ellipsoid $\frac{1}{2}$ inch long.

Perak: Hermitage Hill, Kwala Kangsa (Ridley), and Kamuning. Endemic.

2. H. ELATA, Hook. fil. Fl. Brit. Ind. VI. 116. Ic. Pl. 2191. Stem 2 or 3 inches long with long stout woolly roots. Leaves scattered on the stem ovate acuminate 3 nerved, 4 inches long, $1\frac{1}{4}$ inch wide petiole slender over an inch. Scape slender over a foot long with lanceolate acuminate sheaths. Spike 3 inches long, flowers very small spreading. Bracts lanceolate acuminate with long points. Sepals ovate. Petals linear falcate. Lip boat-shaped ovate not adnate to the column except at the base, with numerous short processes in the sac, apex subacute. Column short, rostellum long deeply bifid. Anther ovate arms of column rather long.

Malacca: Mount Ophir on Gunong Tundok (Ridley); Perak (Scortechini), Batang Padang (Wray 1517). Endemic. I have described this from the Mount Ophir plant in which I find the petals rather narrower than in the figure Ic. Pl. 2191, and some slight differences in the lip. There is a good sketch No. 15 by Scortechini labelled *Goodyera consimilis*, Hook. fil.

3. H. NITIDA, Ridley Journ. Lin. Soc. XXXII. p. 404. Stem creeping ¼ inch through succulent. Leaves ovate acute 3½ inch long 1½ inch wide, dark polished green, petiole 1¼ inch long, sheaths ¼ inch long. Scape 9 inches long pubescent, with numerous scattered sheaths, spike close many flowered. Flowers ¼ inch long. Bracts lanceolate acuminate red ¼ inch long. Sepals ovate equal subobtuse pubescent red. Petals free spathulate white. Lip shorter adnate to the column ovate boat-shaped edges at the tip involute so as to form an acute point, a row of linear processes on each side in the lip base. Column short and broad, arms linear erect. Anther ovate beaked. Pollinia pyriform on a single caudicle, with a linear disc. Rostellar lobes linear rather short.

Singapore: Bukit Timah, Chan Chu Kang (Ridley); Penang: Pulan Betong (Curtis). Endemic.

4. H. OBLIQUA, Bl. Orch. Arch. Ind. p. 104. t. 34. fig. 1. Whole plant about a foot tall with a fairly stout creeping stem. Leaves obliquely lanceolate 2-3 inches long by ¾-1 inch wide rather distant dark green sometimes with a median silver bar, petiole ½-1 inch long. Scape graceful pubescent. Spike fairly dense 3-10 inches long. Flowers numerous reversed appressed. Bracts half as long as the ovary lanceolate acuminate pubescent. Upper sepal nearly ¼ inch long connate with the petals for ½ its length white. Sepals pubescent, laterals lanceolate obtuse dull red pubescent base gibbous. Lip very small base boat-shaped with the edges meeting apex narrow rolled up into a tube, tip open spoon-shaped white, 2 calli in base of lip triangular toothed. Column large yellow. Anther lanceolate red. Pollinia 2 clubbed shaped narrowed into 2 caudicles on an oblong disc. Rostellum arms long linear curved, erect. Capsule elliptic sessile ⅜ inch long.

Singapore: Serangoon Road, Bukit Timah, Pulau Damar (Ridley); Johor: Panchor (Ridley); Sungei Ujong: Bukit Danan (Native Collector); Perak (Scortechini drawing 19); Penang: Pulau Betong (Curtis). Distrib. Borneo, Sumatra. Native name "Poko Tumbah Hutan." Leaves used for poulticing sores.

5. H. PARVIFOLIA, Ridl. Journ. Roy. As. Soc. Str. Br. Vol. XXXIX. p. 87. Stem 2 inches long. Leaves small lanceolate acute nearly sessile 1 inch long ¼ inch wide, sheaths ¼ inch long ampliate. Scape slender pubescent 5 or 6 inches long, with several rather long distant acuminate sheaths. Raceme 2 inches long. Flowers very small ⅛ inch long appressed. Bracts narrow lanceolate acuminate nearly as long as the ovary. Upper sepal adnate to petals ovate acuminate pubescent laterals lanceolate acute. Lip base saccate with minute cylindric processes inside lanceolate acute apex sides involute forming a tube, not longer than the sepals. Column short dilated

above. Rostellum arms nearly as long linear truncate. Anther with a long narrow beak.

Penang: Government Hill (Ridley). Endemic.

83. Hylophila, Lindl.

Terrestrial herbs, stem long creeping. Leaves lanceolate petioled. Flowers small pubescent spicate, connivent. Upper sepal hooded adnate to petals. Petals falcate. Lip a subglobose sac with a small linear limb and 2 calli inside. Column very short, no arms. Rostellum very long bifid. Anther long beaked. Pollinia 2 pyriform with a tapering to a narrow disc.

Species 2. Malayan.

Sepals ¼ inch long glabrous	1. *H. lanceolata.*
Sepals ⅛ inch long viscid pubescent ..	2. *H. mollis.*

1. H. lanceolata, Hook. fil. Fl. Brit. Ind. VI. 110. Stem stout long and creeping. Leaves lanceolate caudate acuminate or acute waved 4-5 inches long, petiole 1 inch long. Scape shorter than the leaves or not much longer 3 inches long dense flowered. Bracts lanceolate acuminate. Flowers numerous white nearly or quite glabrous. Sepals ¼ inch long. Petals obliquely ovate. Lip globosely saccate with a short narrow limb. Column very short. Rostellum lobes and anther much longer. *Dicerostylis lanceolata,* Bl. Orch. Arch. Ind. 116. t. 38. f. 1.

Perak (Scortechini), Bujong Malacca (Curtis). Distrib. Java.

2. H. mollis, Lindl. Gen. and Sp. Orch. Pl. p. 490. Rhizome creeping for some distance. Stem 6-8 inches tall, leaves numerous thin lanceolate acute polished green 4 inches long 1¼ wide, petiole 2 inches. Scape slender glandular pubescent 1½ feet tall, with a few sheathing acuminate leaves. Spike about 6 inches long with small crowded sticky green flowers. Bracts shorter than the ovary ¼ inch long narrow lanceolate acuminate. Sepals ⅛ inch long. Upper one saccate beaked pubescent, laterals ovate oblique. Petals adnate to the upper sepal. Lip saccate adnate to the column, with a linear terminal lobe. Column very short. Anther very long beaked. Rostellum lobes long waved. Capsule elliptic sessile ¼ inch long. Blume Orch. Arch. Ind. 115. t. 35, 36 F. Hook. fil. Fl. Brit. Ind. VI. 110.

Singapore (Wallich 7396), Teban, Bukit Timah, Toa Payoh (Ridley 3926); Malacca (Griffith); Perak (Scortechini), Larut (King's Coll. 2182). Distrib. Sumatra. Often very abundant in wet woods.

84. Lepidogyne, Bl.

A large plant with a stout creeping stem and long linear acuminate leaves. Scape tall covered with sheaths. Spike long and

dense with linear acuminate bracts. Upper sepal adnate to petals. Lip saccate base adnate to the column with several short processes inside side lobes short, terminal lobes linear. Column short, rostellum very deeply bifid, lobes linear. Anther elongate lanceolate acuminate. Pollinia pear-shaped, narrowed into caudicles with a narrow linear disc.

Species 1. Malayan.

L. LONGIFOLIA, Bl. Orch. Arch. Ind. 94. Pl. 25. Leaves 1 foot long lanceolate or linear 2 inches across. Scape nearly 3 feet long, spicate portion 1 foot long. Flowers pink. Sepals lanceolate acuminate ¼ inch long. Capsule elliptic ½ inch long.

Penang: Penara Bukit (Curtis 3084). Distrib. Lingga, Java.

85. STEREOSANDRA, Bl.

A leafless saprophyte with a swollen tuberous rhizome, a tall slender stem and secund raceme of pendulous flowers. Bracts linear or linear lanceolate. Pedicels short sepals and petals subsimilar lanceolate connivent. Lip as long similar entire with 2 rounded pulvini at base no spur. Column very short anther large. Pollinia elongate pyriform. Rostellum absent. Stigma transversely oblong on a short distinct style, ovary ellipsoid not twisted. Capsule elliptic splitting into 3 ribs held together by the perianth at the top.

Species 1 or 2. Java and Malay Peninsula and Siam.

S. JAVANICA, Bl. Mus. Bot. 2. 176. Orch. Arch. Ind. 30. t. 10. fig. 3. 11. fig. 9. Rhizome ringed ½-¾ inch long ⅜ inch through. Stem 15 inches tall fleshy pale with 4-5 distant papery sheaths. Raceme nodding or suberect. Flowers about 10 secund deflexed. Bracts $\frac{1}{12}$ inch long. Pedicel purple sepals and petals ¼ inch long acuminate. Petals slightly broader, all white with black violet tips apex yellowish. Lip white with edges sinuate and tip deep black violet 2 large white round cushions at the base. Anther elliptic oblong white with two violet central blotches and base bilobed yellow filament distant as long as the style. Pollinia elongate pyriform ovary ⅛ inch long ribs deep violet. Capsule elliptic ¼ inch long.

Singapore on the banks of a stream at Bukit Panjang (Ridley Nov. 9, 1903); Johor near Castlewood (Ridley); Penang Hill (Curtis).

Very rare and difficult to find. Hitherto only known from the specimen collected in Java. I found 2 in Singapore and Mr. Curtis 3 in Penang. The flowers are self-fertilised the tip of the pollen reaching down to the stigma, and there being no rostellum.

86. Cryptostylis, R. Br.

Terrestrial herbs with thick woolly roots. Leaves basal long petioled. Scape lateral with several membranous, sheaths at the base, tall. Spike many flowered lax. Sepals and petals very narrow. Lip superior erect lanceolate entire base embracing the column. Column very short. Anther oblong obtuse. Pollinia 2 pyriform, deeply lobed with a small disc or free, rostellum broad thick. Stigma large rounded. Capsule elliptic.

Distribution India, Malaya and Australia.

C. arachnites, Bl. Orch. Arch. Ind. 132. t. 45. Leaves elliptic or ovate acute 2½-6 inches long 1½-3 wide, petiole slender 1-4 inches long. Scape 6-30 inches tall, racemose portion 1-6 inches long. Sepals ½ inch long green. Lip ⅜-½ inch long narrow or wide light brown with darker red brown spots. Capsule ¾ inch long elliptic. Hook. fil. Fl. Brit. Ind. VI. 118. *Zosterostylis arachnites,* Bl. Nijdr. 419. t. 32. *Z. zeylanica,* Lindl. Gen. and. Sp. Orch. Pl. 446. *Z. Walkerae,* Wt. Ic. t. 1748. f. 4.

Singapore: Bukit Timah, Pulau Damar (Ridley); Malacca: Merlimau (Derry 565); Selangor: Bukit Hitam (Kelsall); Perak (Wray), (Scortechini), Larut Hills (Ridley; Penang: Moniot's Road, Government Hill (Curtis); Kedah: Gunong Jerai (Ridley). Distrib. India, Ceylon, Java.

Very variable especially in the breadth of lip and height of scape. Banks and woods from the plains to 3000 feet alt. Local but not rare. Native name "Bunga Bangkong."

IV. Ophrydeae.

87. Habenaria, L.

Terrestrial herbs with lobes or undivided tubes. Leaves sheathing at the base herbaceous. Flowers in a terminal spike or raceme. Sepals subequal or laterals longer spreading. Petals simple or divided. Lip adnate to the column base, simple or 3 lobed, spurred. Anther adnate to the column 2 celled, bases of the cells sometimes prolonged into a tube. Pollinia 2 clubbed or pear-shaped with a long or short slender caudicle and disc to each. Staminodes one or two viscid processes on the face of the column below the anther. Rostellum entire erect below the anther cells.

Species about 400, scattered all over the world.

Lip entire .. .. 1. *H. zosterostyloides.*
Lip trifid. Spur long. Petals undivided.
Lip lobes broad, midlobe deeply bifid yellow .. .. 2. *H. xanthocheila.*

Lip lobes broad, midlobe retuse pink or white .. .. 3. *H. carnea.*
Lobes of lip very narrow linear.
Upper sepal as long as the laterals .. 4. *H. Kingii.*
Upper sepal much shorter .. .. 5. *H. Murtoni.*
Lip trifid. Spur short. Flowers small.
Stem 4-5 feet tall .. .. .. 6. *H. gigas.*
Stem under 3 feet.
Lip shortly 3 lobed, white .. .. 7. *H. lacertifera.*
Lip lobes linear green .. .. .. 8. *H. monticola.*
Petals bifid .. .. 9. *H. singapurensis.*

1. H. ZOSTEROSTYLOIDES, Hook. fil. Fl. Brit. Ind. VI.. 155. Whole plant 1½-2 feet tall, with long stout roots. Leaves ovate acute lower ones radical 4 inches long and 2 inches wide, petiole 2 inches long, cauline leaves lanceolate sessile. Raceme lax. Flowers rather small green. Bracts lanceolate acute shorter than the ovary ¼-½ inch long. Upper sepal ovate, laterals linear oblong rather larger. Petals triangular ovate. Lip entire linear as long as the sepals, spur slender cylindric acute as long as the ovary. Anther cells divergent with very short processes. Pollinia with stout caudicles and large orbicular disc. Capsule nearly sessile elliptic oblong ½ inch long.

Malacca: Mount Ophir (Griffith, Ridley 3147); Perak: Gunong Brumber Pahang (Wray 1538), (Scortechini 570 B). In mossy spots at an altitude of 4000 feet remarkable for its radical leaves like those of *Cryptostylis.*

2. H. XANTHOCHEILA, Ridl. l.c. 411. Tubers oblong whole plant a foot tall. Leaves lanceolate acuminate basal 6 inches long, 1¼ inch wide. Raceme lax about 10 flowered. Flowers 1 inch across showy. Bracts an inch long acuminate. Ovary twice as long. Upper sepal ovate obtuse green laterals ovate oblong deflexed. Petals spathulate oblong. Lip 1½ inch long yellow, 3 lobed side lobes oblong spathulate falcate truncate, midlobe obovate bifid, spur decurved slender 2 inches long. Anther with broad processes. Pollinia fusiform. Rostellum large ovate.

Penang: Pulau Betong (Curtis) and near the spout.

3. H. CARNEA, N. E. Br. Gard. Chron. 1891. II. p. 729. fig. 105; 1892. II. p. 300. Stem tuberous very short, leaves basal oblong or lanceolate acute 3 inches long by 1 inch wide dull green with white spots or plain. Scape 6-12 inches tall with ovate acuminate bracts. Flowers 5-20 large rose pink or white, 1 inch across. Sepals ovate upper one smaller than the others. Petals ovate as large as the upper sepal. Lip 1 inch long, side lobes very broad rounded midlobe reniform or almost orbicular retuse with a narrow base. Anther galeate

processes stout rostellum triangular larger. Pollinia conic with very long slender caudicles.

Lankawi: Limestone Islands, Kwah, Terutau (Curtis 2104). var. *minor*, smaller plant with white flowers and unspotted leaves. Same locality. Distrib. Siam.

4. H. Kingii, Hook. fil. Fl. Brit. Ind. VI. 144. Whole plant 1-2½ feet tall usually stout, leaves crowded at the base subpetioled lanceolate or elliptic lanceolate, 6-10 inches long 1½ inch across undulate. Spike base flowered. Flowers numerous green. Bracts lanceolate acuminate as long as the ovary ¾ inch. Upper sepal hooded ¼ inch long obovate, laterals cultrate obtriangular falcate, base narrow. Petals linear. Lip three lobed, lobes narrow linear, equal. Spur nearly as long as the ovary, slender cylindric. Anther yellow with very long processes. Rostellum small.

Perak: Ipoh (Curtis 3342), (King's Coll. 7172) on limestone rocks.

5. H. Murtoni, Hook. fil. l.c.c. Plant 2-3 feet tall, leaves crowded oblanceolate acute 6-10 inches long 2-3 inches wide narrowed into a petiole. Stem with numerous ovate lanceolate sheath leaves. Flowers ½-¾ inch across. Bracts as long as the ovary. Upper sepal orbicular hooded, much shorter than the laterals which are bluntly triangular. Petals small triangular. Lip trifid with linear filiform lobes, subequal, spur longer than the ovary slender dilate at the apex. Anther cells short, processes very long. Stigmatic processes globose. Rostellum very small.

Perak on limestone rocks (Scortechini 552 B), Gunong Pondok (Murton).

6. H. gigas, Hook. fil. Fl. Brit. Ind. VI. p. 160. Stem 4-5 feet tall hollow at the base and nearly an inch through, nearly 3 feet before leafing. Leaves elliptic acuminate 8-10 inches long, 3 to 4 inches wide, narrowed into a petiole. Spike dense cylindric 8 inches long. Flowers small pale green. Bracts longer than the flowers ¾ inch long. Upper sepal linear oblong obtuse, laterals longer lanceolate. Lip as long as the sepals obtusely trifid, spur shortly oblong. Anther orbicular processes upcurved. Pollinia clavate subsessile on the large oblong glands. Stigmatic processes large. Rostellum small. Capsule linear oblong ¾ inch long.

Perak: Batang Padang at 2000 feet alt. (Wray 1449).

7. H. lacertifera, Benth. Fl. Hongkong p. 362. Whole plant 8-18 inches tall, roots tuberous. Leaves 2 or 3 at the base of the stem lanceolate acute or elliptic lanceolate green. Spike 6 to 9 inches long. Flowers erect appressed fragrant white. Bracts lanceolate acuminate

longer than the ovary. Upper sepal ovate, laterals falcate oblong obtuse longer nearly ¼ inch long. Petals oblong lanceolate obtuse shorter. Lip short broad three lobed lobes blunt short, central one longest, spur very short conic green. Anther cells parallel. Capsule oblong strongly ribbed ½ inch long. Hook. fil. Fl. Brit. Ind. VI. 163. *H. Maingayi,* King Journ. As. Soc. Beng. LXVI. II. 1897. p. 604. *Coeloglossum lacertiferum* and *acuminatum,* Lindl. Gen. and Sp. Orch. Pl. 302. *Peristylus chloranthus,* Lindl. Kew. Journ. Bot. VII. 37. *Chaeradoplectron spiranthes,* Schauer Pl. Meyen. 436. t. 13. C.

Singapore: Tanglin, Jurong, etc., (Ridley); Johor: near Castle Wood (Ridley); Malacca: Sungei Ujong (Derry 101), Nyalas (Goodenough 1546); Penang: Government Hill (Curtis 2105), (Ridley 7061), (Wallich 7055).

Common on road sides and in grassy spots. The var. *robustior,* Kranzl. Engl. Jahrb. XVI. (1892). p. 160. var. *robusta,* Hook. fil. l.c.c. is a common large form. *H. Maingayi,* King. being the most abundant road side form. The plant varies but little except in size. I have met a form in which the outer lobes of the lip were longer than the central one. Distrib. India, Lingga, Hongkong.

8. H. MONTICOLA, Ridl. Journ. Linn. Soc. XXXII. 413. Whole plant 15 inches tall, tubers ½ inch long oblong. Leaves basal 3-4 lanceolate acute an inch long ⅛ inch wide, dark green. Stem slender with a few acuminate bracts, raceme lax. Flowers numerous very small green. Bracts lanceolate acute ⅛ inch long nearly as long as the pedicel. Sepals oblong ovate $\frac{1}{16}$ inch long. Petals a little shorter elliptic oblong. Lip trifid with a short claw side lobes ¼ inch long filiform midlobe much shorter spur as long as sepals straight bifid. Capsule elliptic ¼ inch long.

Malacca: Mount Ophir (Ridley 9994); Kedah: Gunong Jerai (Ridley).

9. H. SINGAPURENSIS, Ridl. Journ. Linn. Soc. XXXII. 410. Whole plant about 3 feet tall lower part of stem covered with sheaths only. Leaves about 12 lanceolate acuminate dark green, 6 inches long 1 inches wide, subpetiolate, sheaths 1 inch long. Scape glaucescent, with scattered acuminate sheaths. Flowers numerous crowded. Bracts lanceolate acuminate glaucous ⅜ inch. Pedicel and ovary one inch long. Upper sepal lanceolate oblong boat-shaped, with a long point ⅜ inch long, laterals oblong obtuse oblique with a long point, all greenish white. Petals bifid with long linear olive green arms. Lip 3 lobed to nearly the base lobes linear, midlobe a little shorter, spur slender cylindric ¾ inch long. Anther with long straight processes.

Singapore: Chua Chu Kang (Ridley); Johor: Batu Pahat (Ridley 1194). In dense wet jungle swamps, local.

V. Cypripedieae.

87. Cypripedium.

Herbs usually terrestrial. Leaves distichous radical often tessellate. Scape 1 to many flowered. Flowers large. Sepals spreading laterals connate under the lip. Petals free narrower and usually longer. Lip sessile lateral lobes inflexed short, midlobe large saccate inflated. Column short terete. Anthers 2 globose with a large disc-like staminode between and covering them, stigma rounded disc-shaped. Capsule long and narrow.

Species about 40. Europe, Asia and North America.

Leaves oblong tessellate.

Petals as broad as the sepals, not warted .. 1. *C. niveum.*
Petals narrower than sepals warted on the edge 2. *C. barbatum.*
Petals narrower than sepals warted all over 3. *C. superbiens.*
Leaves narrow coriaceous not tessellated .. .. 4. *C. Lowii.*

1. C. niveum, Rchb. fil. Gard. Chron. 1869, 1038. Xen. Orch. II. 155. Leaves linear oblong green above with darker blotches, dark purple beneath. Scape 6-8 inches tall 1-2 flowered. Bracts short close-fitting. Flowers 3 inches across white dotted with purple. Dorsal sepal broad orbicular, laterals ovate oblong smaller. Petals broadly oblong obtuse longer. Lip sac ovoid mouth contracted. Staminode reniform oblong yellow with a white edge. Bot. Mag. t. 5922. Ill. Hort. 1871. t. 83. Flor. Mag. 1871. t. 543. Reichenbachia I. t. 34. Gard. Chron. 1883. II. fig. 1. Hook. fil. Fl. Brit. Ind. VI. 171.

Lankawi Islands on limestone rocks (Curtis). Distrib. Tembilan Islands.

2. C. barbatum, Lindl. Bot. Reg. 1841. Misc. 53. 1842. t. 17. Leaves oblong or linear oblong 4-8 inches long 1 inch wide acute pale green with darker spots. Scape 10-12 inches tall pubescent. Bracts shorter than the ovary. Flowers 1-2, 2-3 inches across. Upper sepal broad, ovate or orbicular acute or obtuse folded in the middle white with purple veins, base greenish veined purple. Petals greenish brown 2 inches long, linear oblong curved with a few black warts and cilia along the edge. Lip reddish purple helmet-shaped. Staminode reniform rotten deeply emarginate in front. Capsule oblong tapering at base 1 inch long. Bot. Mag. 4234. Fl. des Serres III. t. 190. XVIII. t. 1879. Belg. Hortic. XXXIII. 96. t. 7. Warners Sel. Orchid

Ser. 3. t. 11. (var. Warneri) Gard. Chron. 1866. II. 308. f. 63. Hook. fil. Fl. Ind. VI.174. *C. purpuratum,* Wight. Ic. 1760. (not of Lindley). *C. Warnerianum,* Rchb. fil. Gart. Zeit. 1883. fasc. IX. *C. orbum,* Rchb. fil. Gard. Chron. 1887. II. 778. *C. Crossii,* Belg. Hort. XV. 227. Veitch. Man. 12. fig.

Johor: Gunong Panti (Ridley); Malacca: Mount Ophir (Griffith and all Collectors); Penang: Government Hill (Maingay, Curtis, etc.); Kedah: Gunong Jerai (Ridley 5130). Distrib. Siam. On rocks and in grassy slopes at an altitude of 2-4000 feet. Native name "Bunga Kasut." It is somewhat variable in depth of colour.

3. C. SUPERBIENS, Rchb. fil. Bonplandia 1855. 227. Allgem. Gartenz. 1856. 323. Xen. Orch. II. 9. t. 103. Leaves oblong tessellate 5-7 inches long by 1½ inch broad. Scape 9-12 inches long. Bracts much shorter than the ovary. Flowers 4 inches across solitary. Dorsal sepal orbicular acute white veined with green. Petals broad oblong greenish white ciliate along the edge and dotted all over with purple warts. Lip helmet-shaped reddish. Staminode suborbicular notched in front 2 lobed, green. Garten. Fl. 1863. 49. Warner Sel. Orch. II. t. 12. Williams Orchid Album XI. Pl. 486. Flore des Serres t. 1996. Hook. fil. Fl. Brit. Ind. VI. 173. *C. Veitchianum,* Ill. Hort. XII. t. 429. Rev. Hort. 1871. 595. fig. 78, 79. *C. barbatum Veitchii,* Fl. des Serres t. 1453. *C. barbatum superbum,* Belg. Hort. 1883. 97.

Malacca: Mount Ophir (Lobb).

This plant seems never to have been seen on Mount Ophir again. It came with a lot of *C. barbatum,* and should be looked for again. It is easily distinguished from *C. barbatum* by its green veined upper sepal and the petals dotted all over with purple warts.

4. C. LOWII, Lindl. Gard. Chron. 1847. p. 765. Epiphytic. Leaves lingulate plain green 9-15 inches long apex bilobed coriaceous. Scapes 2 or 3 feet tall, 3 to 5 flowered. Bracts ⅓ the length of the ovary. Flowers 3-4 inches across pubescent. Upper sepal broadly oval acute yellowish green, base purplish lower ones similar but smaller. Petals 3 inches long spathulate twisted decurved, base yellow with black spots, apex bilobed purple. Lip cylindric helmet-shaped brown purple. Staminode obcordate edged with purple hairs green with a tooth on the base and one in the sinus. Fl. des Serres IV. t. 375. Williams Orchid Album 9. Pl. 428. Veitch's Manual p. 38. *C. cruciforme,* Zoll. and Miq. De Vr. Ill. Orch. 1854.

Selangor: The Gap, Pahang Track (Curtis). Distrib. Borneo and Sumatra.

C. sp. I have twice found plants of a small *Cypripedium,* with faintly tessellated leaves in sandy spots on the sea shore in Johore.

It seems to be allied to *C. barbatum,* Lindl. No flowers were met with, and further search was in vain as the place was burnt later. The locality for a *Cypripedium* was most unusual, and the plant should be sought again.

III. APOSTASIACEAE.

Erect herbs with a leafy stem bearing a terminal raceme or panicle of moderate or small white or yellow flowers. Perianth superior of three sepals and three petals lanceolate cuspidate. Stamens three or one aborted. Anthers dorsifixed, two celled, pollen powdery, filaments connate below for half their length. Style cylindric. Stigma capitate obscurely 3 lobed. Ovary triquetrous 3 celled. Fruit capsular, rarely baccate. Seeds minute with reticulated testa.

Flowers moderately large. Perfect stamens 3	1. *Neuwiedia.*
Flowers very small. Perfect stamens 2	2. *Apostasia.*

1. Neuwiedia, Bl.

Herbs with erect or creeping stems. Leaves numerous plicate lanceolate. Flowers racemose with long bracts, yellow or white. Sepals and petals equal and similar lanceolate cuspidate. Stamens 3 fertile. Anthers linear oblong dorsifixed, filaments connate at the base with the style, upper third only free. Style stout stigma capitate. Fruit capsular or baccate. Seeds numerous minute.

Species 6 Malayan to the Louisiades.

Fruit capsular, flowers yellow	1. *N. Lindleyi.*
Fruit capsular, flowers white	2. *N. Griffithii.*
Fruit a red berry, flowers yellow	3. *N. Curtisii.*

1. N. Lindleyi, Rolfe. Journ. Linn. Soc. XXV. 232. t. 48. f. 10-12. Stem 4-5 feet tall, erect leaves lanceolate acuminate many nerved tapering below into a petiole, 18-24 inches long, 2 inches wide. Upper part of stem covered with appressed narrow lanceolate bracts. Raceme 12-24 inches long dense. Flowers numerous shortly pedicelled bright yellow. Sepals ½ inch long lanceolate pubescent. Capsule ½ inch long, with 3 broad obovate reflexed valves. Hook. fil. Fl. Brit. Ind. VI. 175. Bot. Mag. t. 7368.

Singapore: Chua Chu Kang, Bukit Timah (Ridley); Malacca: Bukit Lintang (Derry 105); Sungei Ujong (Cantley); Penang (Curtis 469). Distrib. Borneo. Native name "Jamba."

2. N. Griffithii, Rchb. fil. Xen. Orch. II. 215. Rhizome long creeping with long branched woolly roots. Leaves lanceolate petiolate acuminate, 8 inches long 1¾ inch wide, petiole 2 inches long. Raceme

shorter than the leaves 4-5 inches long dense peduncle short. Flowers white. Sepals lanceolate pubescent mucronate $\frac{3}{16}$ inch long. Petals broader thinner keeled. Lip lanceolate with a raised median bar. Stamens 3 white filaments connate at base. Anther cells at base devaricate. Style longer stigma clavate obscurely 3 lobed. Capsule $\frac{1}{4}$ inch long 3 angled pubescent. Rolfe. Journ. Linn. Soc. Hook. fil. Fl. Brit. Ind. VI. p. Bot. Mag. t. 7425.

Singapore: Sungei Morai (Ridley 2315); Bukit Timah (Ridley 3896); Malacca: Bukit Sadanen (Goodenough 1510), (Griffith, Maingay); Perak: Ulu Bubong (King's Coll. 10128).

3. N. Curtisii, Rolfe. Journ. Linn. Soc. XXV. 233. t. 48. f. 13. Stem not creeping a foot or more tall acuminate 18 inches long 2-2½ inch wide. Raceme pubescent 4-5 inches long shortly acuminate. Pedicel $\frac{1}{8}$ inch long. Sepals yellow linear lanceolate. Petals broader. Ovary $\frac{1}{4}$ inch long, pubescent. Fruit a red succulent berry. *Tupistra singapureana,* Wall. List 5195. Bak. Journ. Linn. Soc. XIV. 581. Hook. fil. l.c. 325.

Singapore (Wallich), Changi (Ridley); Johor: Gunong Panti (Ridley 4145); Negri Sembilan, Gunong Angsi (Ridley 9998); Perak: Goping (King's Collector 6015); Penang Hill (Curtis 1185 2826). Distrib. Sumatra.

2. Apostasia, Bl.

Stems slender woody ascending. Leaves linear acuminate sheathing. Inflorescence terminal panicled, or racemose, nodding. Flowers small sessile or shortly pedicelled. Ovary long narrow. Petals and sepals similar connivent or sometimes recurved. Stamens perfect 2, the third reduced to a staminode or absent. Style slender. Stigma obscurely 3 lobed. Capsule linear.

Species 5 or 6. India, Ceylon, Malay Islands to Australia.

Filament of third stamen persistent	1. *A. Wallichii.*
No trace of third stamen.	
Leaves linear	2. *A. nuda.*
Leaves lanceolate	3. *A. latifolia.*

1. A. Wallichii, Br. Wall. Pl. As. Rar. I. 76. t. 85. Stem 6-8 inches tall. Leaves linear acuminate 6-8 inches long ¼ inch wide. Racemes slender 2-3 inches long recurved spreading with few or no bracts at the base. Flowers secured yellow. Floral bracts lanceolate acuminate. Ovary and pedicel slender ½ inch long. Sepals and petals narrow linear acuminate recurved. Anthers oblong acute.

Johor: Gunong Panti (Ridley); Pahang: Tahan River (Ridley); Selangor: Bukit Hitam (Ridley 7782); Perak: Ulu Bubong (King's Coll. 10629); Penang (Curtis).

2. A. NUDA, R. Br. Wall. Pl. As. Rarior. I. 1830. 76. t. 85. Stems several or solitary 1-2 feet tall. Leaves linear acuminate 5-8 inches long $\frac{1}{4}$-$\frac{1}{2}$ inch wide. Panicled decurved 2-4 inches long with numerous linear crowded bracts at the base of the branches. Bracts of flowers lanceolate acuminate $\frac{1}{8}$ inch long. Ovary and pedicel $\frac{1}{4}$ inch long. Sepals and petals white (rarely yellow) $\frac{1}{16}$ inch long lanceolate cuspidate. Stamens filaments short. Anthers basifixed cells equal. Blume. Ann. Sc. Nat. Ser. II. 2. 93. Miq. Fl. Ind. Bat. III. 748. Rolfe. Journ. Linn. Soc. XXV. 239. Hook. fil. Fl. Brit. Ind. VI. *A. Brunonis,* Griff. Notulae III. 1851. 243. Icones t. 282.

Singapore (Lobb), Changi (Ridley 2376), Jurong (Ridley 3871); Johor: Bukit Murdom (Kelsall); Negri Sembilan: Perhentian Tinggi (Ridley); Malacca (Maingay), Mount Ophir (Ridley 3133); Perak: Dindings, Lumut (Ridley); Penang: Moniot's Road (Ridley); Kedah: Gunong Jerai (Ridley 5125). Common in dry woods up to 3000 feet elevation. Native names "Pelampas budak," "Sen Juan Hutan Jantan" and "Kenching Pelandok." Used medicinally for diarrhoea and hydrophobia.

3. A. LATIFOLIA, Rolfe. Journ. Linn. Soc. XXV. p. 242. Stem 6 inches to 3 feet tall. Leaves lanceolate acuminate petioled 3-6 inches long $\frac{3}{4}$-1 inch wide. Racemes 1-5 inches long. Bracts subulate lanceolate. Ovary sessile. Flowers not secured small. Petals and sepals linear oblong short. Anthers linear cordate, no staminode.

Malacca: Mount Ophir (Ridley); Perak (Scortechini 868), Ulu Batang Padang (Wray 1605).

Materials for a Flora of the Malayan Peninsula

by

H. N. RIDLEY, M.A., F.R.S., F.L.S., F.R.H.S.

Director of Botanic Gardens,

Singapore, S. S.

MONOCOTYLEDONS

VOL. I.

Singapore:
Printed at the Methodist Publishing House.
1908.

Introductory Note.

The three parts of the Materials for a Flora of the Malay Peninsula dealing with the Monocotyledons were written in the same style and form as the other parts of this work which were brought out in the Journal of the Asiatic Society of Bengal, by Sir George King, aided by other botanists. The first part was published in July 1889 and the work has continued to the present day, being now nearly completed to the end of the Gamopetalae, leaving now only the Apetalae, to be completed. The three volumes of the Monocotyledons were published respectively on.

Errata Vol. I.

P.	18	lines 33.	Gnting read Ginting.
	75	„ 22.	Andenopetalum read Adenopetalum.
	82	„ 42.	bifidum read semibifidum.
	109	„ 5.	pauciflora read pauciflorum.
		14.	Eri read Eria.
	125	„ 35.	Arudina read Arundina.
	159	„ 2.	Garwailca read Garwalica.
	213	„ 24.	Gleiculata read Geniculata.

Addendum.

Page 84 under Excluded species, mention should have been made of

CIRRHOPETALUM LONGESCAPUM, Teysm. & Binn. in Tijdschr. Neder. Ind. XXIV. (1862) p. 310. "Penang Lobb."

The description given excludes it from the genus *Bulbophyllum* and as the type, in the Buitenzorg herbarium has perished, it is impossible to guess what plant was intended.

Materials for a Flora of the Malayan Peninsula.

INDEX.

Acampe penangiana, Ridl. 149
Acriopsis crispa, Griff. 188
A. Griffithii, Rchb. f. 188
A. indica, Wight 188
A. javanica, Reinwdt. 187
A. picta, Lindl. 188
A. purpurea, Ridl. 188
A. Ridleyi, Hook. fil. 188
Adenoncos major, Ridl. 148
A. parviflora, Ridl. 149
A. virens, Bl. 149
Adenostylis emarginata, Bl. 217
A. integerrima, Bl. 217
Aerides arachnitis, Sw. 155
A. arachnites, Lindl. 183
A. amplexicaule, Lindl. 188
A. Ballantinianum, Rchb. f. 180
A. cornutum, Roxb. 180
A. flavidum, Lindl. 180
A. guttatum, Roxb. 159
A. latifolium, Thw. 153
A. matutina, Bl. 156
A. nobile, Warn. 180
A. odoratum, Liur. 179
A. praemorsum, Willd. 159
A. Reichenbachianum, Lindl. 180
A. Rohanianum, Rchb. f. 180
A. spicatum, Don. 159
A. suaveolens, Bl. 180

A. suavissimum, Lindl. 180
A. virens, Bl. 180
Aetheria mollis, Lindl. 218
Agrostophyllum callosum, Rchb. f. 108
A. majus, Hook. fil. 108
A. pauciflorum, Hook. fil. 109
Amblyglottis angustifolia, Bl. 121
A. veratrifolia, Bl. 120
Anaectochilus albo-lineatus, Par. 214
A. brevilabris, Lindl. 213
A. brevistylis, Ridl. 215
A. calcaratus, Ridl. 214
A. Dawsonianus, Low 216
A. geniculatus, Ridl. 213
A. macranthus, Ridl. 215
A. Reinwardtii, Bl. 213
Apetalon minutum, Wight 206
Aphyllorchis pallida, Bl. 205
A. striata, Ridl. 205
Aporum concinnum, Lindl. 40
A. indivisum, Lindl. 41
A. Leonis, Lindl. 41
A. micranthum, Griff. 38
A. serra, Lindl. 38
A. sinuatum, Lindl. 40
A. subteres, Griff. 43
Apostasia Brunonis, Griff. 233
A. latifolia, Rolfe. 233
A. nuda, R. Br. 233
A. Wallichii, R. Br. 232
Appendicula anceps, Bl. 193
A. bifaria, Lindl. 194
A. callosa, Bl. 198
A. Chalmersiana, F. Muell. 197
A. complanata, Ridl. 193
A. cordata, Hook. fil. 196
A. cornuta, Bl. 194
A. elongata, Ridl. 198
A. echinocarpa, Hook. fil. 196
A. Hasselti, Bl. 198
A. lancifolia, Hook. fil. 197
A. Lewisii, Griff. 193
A. lucida, Ridl. 195
A. Maingayii, Hook. fil. 197
A. Manilense, Rchb. f. 195
A. muricata, Teysm. 196

A. pendula, Bl. 197
A. Peyeriana, Kranzl. 197
A. purpurascens, De Vr. 194
A. reduplicata, Rchb. f. 195
A. reflexa, Bl. 196
A. rhodiola, Rchb. f. 197
A. rupestris, Ridl. 194
A stipulata, Griff. 198
A. torta, Bl. 197
A. uncata, Ridl. 195
Arachnanthe alba, Ridl. 156
A. angustifolia, Hook. fil. 156
A. Maingayi, Ridl. 156
A. moschifera, Bl. 156
Arachnis moschifera, Bl. 155
Arethusa ecristata, Griff. 206
Arundina bambusifolia, Lindl. 124
A. Cantleyi, Hook. fil. 125
A. densa, Lindl. 124
A. densiflora, Hook. fil. 124
A. Philippii, Rchb. fil. 124
A. revoluta, Hook. fil. 124
A. speciosa, Bl. 124
A. Wallichii, Rchb. fil. 125
Ascochilus hirsutus, Ridl. 179
A. hirtulus, Ridl. 178
A. minutiflorus, Ridl. 179
A. siamensis, Ridl. 178
A. teres, Ridl. 178
Ascotainia penangiana, Ridl. 116
Bletia angustifolia, Gaud. 117
B. graminifolia, Don. 124
Blyxa Griffithii, Hook. fil. 4
B. Malayana, Ridl. 4
Bromheadia alticola, Ridl. 144
B. aporoides, Rchb. f. 145
B. brevifolia, Ridl. 145
B. Finlaysoniana, Rchb f. 144
B. palustris, Lindl. 143
B. pungens, Ridl. 145
B. rupestris, Ridl. 144
B. scirpoidea, Ridl. 145
B. sylvestris, Ridl. 144
Bulbophyllum acuminatum, Ridl. 81
B. adenopetalum, Lindl. 75
B. alcicorne, Par. & Rchb. 70

B. avicella, Ridl. 67
B. auratum, Ridl. 82
B. botryophorum, Ridl. 71
B. brevipes, Ridl. 73
B. breviscapum, Ridl. 78
B. capitatum, Lindl. 73
B. catenarium, Ridl. 67
B. cincinnatum, Ridl. 69
B. citrinum, Ridl. 75
B. claudestinum, Lindl. 72
B. cleistogamum, Ridl. 72
B. concinnum, Hook. fil. 74
B. crassipes, Hook. fil. 84
B. Curtisii, Ridl. 81
B. densiflorum, Ridl. 71
B. Ephippium, Ridl. 78
B. Epicrianthes, Hook. fil. 68
B. flammuliferum, Ridl. 77
B. galbinum, Ridl. 64
B. gelantinosum, Teysm. 64
B. gigas, Ridl. 70
B. globulus, Hook. fil. 77
B. Griffithianum, Par. & Rchb. f. 83
B. Henshalli, Lindl. 64
B. hirtulum, Ridl. 68
B. hispidum, Ridl. 67
B. lasianthum, Lindl. 70
B. leptosepalum, Hook. f. 76
B. lilacinum, Ridl. 71
B. limbatum, Lindl. 69
B. linearifolium, King 77
B. Lobbii, Lindl. 64
B. longiflorum, Ridl. 66
B. macranthum, Lindl. 63
B. makoyanum, Ridl. 81
B. maximum, Ridl. 79
B. Medusae, Rchb. f. 79
B. membranifolium, Hook. fil. 65
B. microbulbon, Ridl. 82
B. modestum, Hook. fil. 74
B. montigenum, Ridl. 76
B. oblanceolatum, King 75
B. ochraceum, Ridl. 84
B. ochranthum, Ridl. 74
B. odoratum, Lindl. 77
B. patens, Hook. fil. 62

B. perakense, Ridl. 82
B. pileatum, Griff. 63
B. planibulbe, Ridl. 79
B. psittacoides, Ridl. 80
B. pteriphilum, Rolfe. 85
B. pulchellum, Ridl. 83
B. pustulatum, Ridl. 65
B. Reinwardtii, Hook. fil. 64
B. Restrepia, Ridl. 78
B. rugosum, Ridl. 65
B. sanguineo-maculatum, Ridl. 66
B. semibifidum, Ridl. 82
B. siamense, Rchb. fil. 65
B. stella, Ridl. 72
B. stenophyllum, Ridl. 83
B. striatellum, Ridl. 67
B. subumbellatum, Ridl. 66
B. tenerum, Ridl. 68
B. trifolium, Ridl. 71
B. trisetosum, Griff. 73
B. vanessa, King 72
B. vaginatum, Rchb. f. 80
B. variabile, Ridl. 64
B. vermiculare, Hook. fil. 74
B. Wrayi, Hook. fil. 69
Calanthe albo-lutea, Ridl. 121
C. angustifolia, Lindl. 121
C. aurantiaca, Ridl. 122
C. Ceciliae, Rchb. fil. 121
C. comosa, Rchb fil. 120
C. curculigoides, Lindl. 122
C. diploxiphion, Hook. fil. 121
C. gigantea, Hook. fil. 114
C. Perrottetii, A Rich. 120
C. phajoides, Rchb. f. 120
C. rubens, Ridl. 123
C. Scortechinii, Hook. fil. 122
C. veratrifolia, R. Br. 120
C. vestita, Lindl. 123
C. Wrayi, Hook. fil. 121
Calcearia fornicata, Bl. 205
C. picta, Bl. 204
Callostylis rigida, Bl. 106
Caulinia ovalis, R. Br. 6
Ceratostylis clathrata, Hook. fil. 111
C. cryptantha, Ridl. 110

C. eriacoides, Hook. fil. 110
C. gracilis, Bl. 109
C. lancifolia, Hook. fil. 110
C. malaccensis, Hook. fil. 110
C. pendula, Hook. fil. 111
C. puncticulata, Ridl. 111
C. robusta, Hook. fil. 111
C. teres, Rchb. fil. 110
Chaeradoplectron spiranthes, Schau. 228
Chelonanthera speciosa, Bl. 132
Ch. sulphurea, Bl. 132
Chrysoglossum villosum, Bl. 112
Cirrhopetalum acuminatum, Ridl. 81
C. Andersonii, Kurz. 81
C. auratum, Lindl. 82
C. bifidum, Ridley 82
C. Blumei, Lindl. 78
C. breviscapum, Rolfe 79
C. Brienianum, Rolfe 81
C. caudatum, Wight 80
C. citrinum, Ridl. 75
C. concinnum, Hook. fil. 83
C. gamosepalum, Griff. 84
C. gracillimum, Rolfe 80
C. linearifolium, Ridl. 83
C. Makoyanum, Rchb. fil. 81
C. maximum, Ridl. 79
C. Medusae, Lindl. 80
C. microbulbon, Ridl. 82
C. ochraceum, Ridl. 84
C. planibulbe, Ridl. 79
C. psittacoides, Ridl. 80
C. vaginatum, Lindl 80
Claderia viridiflora, Hook. fil. 136
Cleisostoma cristatum, Ridl. 174
C. fuscum, Lindl. 165
C. ionosma, Ridl. 171
C. latifolium, Lindl 165
C. parvum, Ridl. 167
C. spicatum, Lindl. 168
C. tenuicaule, King 162
C. uteriferum, Hook. fil. 167
Cnemidia angulosa, Lindl. 209
C. semilibera, Lindl. 209
Coeloglossum acuminatum, Lindl. 228
C. lacertiferum, Lindl. 228

Coelogne anceps, Hook. fil. 133
C. angustifolia, Ridl. 130
C. articulata, Rchb. fil. 136
C. asperata, Lindl. 129
C. carnea, Hook. fil. 134
C. casta, Ridl. 130
C. caulescens, Griff. 144
C. Cumuigi, Lindl. 131
C. Dayana, Rchb. f. 127
C. densiflora, Ridl. 128
C. Foerstermannii, Rchb. fil. 130
C. imbricata, Rchb. fil. 135
C. Khasiyana, Rchb. fil. 136
C. Kingii, Hook. fil. 130
C. longibractata, Hook. fil. 129
C. Lowii, Lindl. 129
C. macrobulbon, Hook. fil. 128
C. Maingayi, Hook. fil. 130
C. Massangeana, Rchb. fil. 127
C. Mayeriana, Rchb. fil. 130
C. pallens, Ridl. 133
C. pallida, Rchb. fil. 135
C. pandurata, Lindl. 131
C. prasina, Ridl. 133
C. pusilla, Ridl. 133
C. quadrangularis, Ridl. 129
C. Rochussenii, De Vr. 128
C. speciosa, Lindl. 132
C. stenochila, Hook. fil. 134
C. sulphurea, Rchb. fil. 132
C. testacea, Lindl. 127
C. tomentosa, Wawr. 127
Collabium nebulosum, Bl. 112
C. Wrayii, Hook. fil. 189
Conochilus distichus, Hassk. 197
Corymbis brevistylis, Hook. fil. 208
C. longiflora, Hook. fil. 208
C. rhytidocarpa, Hook. fil. 208
Corysanthes fornicata, Lindl. 204
C. mucronata, Bl. 204
C. picta, Lindl. 204
Cryptoglottis serpyllifolia, Rchb. fil. 193
Cryptostylis arachnites, Bl. 225
Cymbidium acutum, Ridl. 140
C. alatum, Roxb. 190
C. bambusifolium, Roxb. 124

C. Finlaysonianum, Lindl. 139
C. Gibsoni, Paxton 141
C. Huttoni, Hook. fil. 141
C. iridifolium, Roxb. 17
C. Javanicum, Bl. 141
C. imbricatum, Roxb. 135
C. lancifolium, Hook. fil. 141
C. pendulum, Lindl. 140
C. pubescens, Lindl. 140
C. scriptum, Sw. 143
C. Stephensi, Ridl. 141
C. tricolor, Miq. 140
C. triste, Willd. 148
Cypripedium barbatum, Lindl. 229
C. Crossii, Belg. Hort. 230
C. cruciforme, Zoll. 230
C. Lowii, Lindl. 230
C. niveum, Rchb. f. 229
C. orbum, Rchb. f. 230
C. purpuratum, Wight 230
C. superbiens, Rchb. f. 230
Cyrtopera squalida, Rchb. fil. 137
Cystorchis aphylla, Ridl. 212
C. Javanica, Bl. 212
C. variegata, Bl. 212
Cyrtosia altissima, Bl. 202
Cytheris Griffithii, Wight 123
Damasonium indicum, Willd. 5
Dendrobium abietinum, Ridl. 44
D. acerosum, Lindl. 43
D. aciculare, Lindl. 57
D. aduncum, Hook. fil. 56
D. Aegle, Ridl. 51
D. aggregatum, Roxb. 57
D. albido-tomentosum, Bl. 100
D. aloaefolium, Rchb. fil. 38
D. atropurpureum, Miq. 40
D. atrorubens, Ridl. 41
D. aureum, Lindl. 56
D. bifarium, Lindl. 45
D. bifidum, Ridl. 37
D. breviflorum, Lindl. 57
D. bursigerum, Lindl. 50
D. calcaratum, Lindl. 44
D. calicopis, Ridl. 53
D. callibotrys, Ridl. 49

D. cerinum, Rchb. fil. 55
D. clavator, Ridl. 47
D. clavipes, Hook. fil. 48
D. comatum, Lindl. 36
D. compressum, Lindl. 30
D. concinnum, Miq. 40
D. conostalix, Rchb. fil. 43
D. cornutum, Hook. fil. 51
D. criniferum, Lindl. 36
D. crocatum, Hook. fil. 52
D. crumenatum, Sw. 48
D. cruentum, Rchb. fil. 57
D. Dalhousieanum, Wall. 57
D. Derryi, Ridl. 52
D. excisum, Lindl. 45
D. eulophotum, Lindl. 39
D. euphlebium, Lindl. 49
D. Flabellum, Rchb. fil. 36
D. flavidulum, Hook. fil. 55
D. flexile, Ridl. 42
D. Foxii, Ridl. 53
D. gemellum, Lindl. 45
D. geminatum, Hook. fil. 35
D. gracile, Lindl. 47
D. graude, Hook. fil. 40
D. hercoglossum, Rchb. fil. 56
D. heterocarpum, Wall. 56
D. Hosei, Ridl. 46
D. Hughii, Rchb. fil. 53, 57
D. hymenopterum, Hook. fil. 52
D. Jenkinsii, Wall. 57
D. junceum, Lindl. 57
D. Kelsallii, Ridl. 36
D. kentrochilum, Hook. fil. 51
D. kentrophyllum, Hook. fil. 42
D. Kunstleri, Hook. fil. 37
D. laciniosum, Ridl. 38
D. lamellatum, Lindl. 50
D. Leonis, Rchb. fil. 41
D. Lindleyi, Steud. 57
D. Lobbii, Lindl. 38
D. Lobbii, Teysm. 44
D. lonchophyllum, Hook. fil. 35
D. longicolle Lindl. 34
D. longipes, Hook. fil. 34
D. macranthum, Hook. fil. 57

D. macropodum, Hook. fil. 34
D. macrophyllum, Lindl. 57
D. Manillense, Schau. 195
D. Mannii, Ridl. 42
D. metachilinum, Rchb. f. 46
D. megaceras, Hook. fil. 54
D. micranthum, Griff. 38
D. modestum, Ridl. 50
D. pachyglossum, Par. & Rchb. fil. 41
D. pallidiflorum, Ridl. 37
D. pandaneti, Ridl. 47
D. panduriferum, var. Hook. fil. 52
D. pensile, Ridl. 45
D. perakense, Hook. fil. 99
D. pumilum, Hook. fil. 58
D. pyropum, Ridl. 52
D. prostratum, Ridl. 41
D. quadrangulare, Par. 35
D. revolutum, Lindl. 46
D. rhizophoreti, Ridl. 39
D. rhodostele, Ridl. 38
D. rhombeum, Lindl. 56
D. roseatum, Ridl. 53
D. rosellum, Ridl. 39
D. roseopunctatum, Ridl. 37
D. sanguinolentum, Lindl. 55
D. Scortechinii, Hook. fil. 57
D. secundum, Lindl. 50
D. serpens, Hook. fil. 51
D. serra, Lindl. 38
D. setifolium, Ridl. 47
D. sinuatum, Lindl. 40
D. subulatum, Hook. fil. 43
D. superbum, Rchb. fil. 56
D. tenuicaule, Ridl. 51
D. teres, Lindl. 42
D. terminale, Par. & Rchb. fil. 25
D. tropoeoliflorum, Hook. fil. 51
D. tuberiferum, Hook. fil. 48
D. uniflorum, Griff. 46
D. villosulum, Wall. 41
D. virescens, Ridl. 51
D. viridicatum, Ridl. 55
D. Zollingerianum, Teysm. 36
Dendrochilum album, Ridl. 85
D. angustifolium, Ridl. 85

D. bracteosum, Rchb. fil. 86
D. crassum, Ridl. 85
D. ellipticum, Ridl. 85
D. linearifolium, Hook. fil. 27
D. longifolium, Rchb. fil. 27
D. pallideflorum, Hook. fil. 86
Dendrocolla alba, Ridl. 185
D. amplexicaule, Bl. 181
D. arachnites, Bl. 183
D. carinatifolia, Ridl. 186
D. carnosa, Ridl. 186
D. ciliata, Ridl. 186
D. filiformis, Ridl. 184
D. maculata, Ridl. 186
D. pardalis, Ridl. 185
D. psiloglottis, Ridl. 187
D. trichoglottis, Ridl. 185
Dicerostylis lanceolata, Bl. 223
Dienia congesta, Lindl. 14
Dilochia Cantleyi, Ridl. 125
D. Wallichii, Lindl. 125
Diphyes capitata, Bl. 73
D. odorata, Bl. 77
Diplanthera, sp. Griff. 6
Dipodium paludosum, Rchb. fil. 142
D. pictum, Rchb. fil. 141
Dossinia marmorata, Morren. 215
Enhalus acoroides, Zoll. 6
E. Koenigii, Rich. 6
E. marinus, Griff. 6
Enhydrias angustipetala, Ridl. 3
Ephippium ciliatum, Bl. 18
Epidendrum flos-Aeris, L. 155
E. retusum, L. 159
E. scriptum, L. 143
E. sessile, Koen. 73
E. triste, Forest 148
Epiphanes pallens, Rchb. fil. 206
Eria aeridostachya, Rchb. fil. 97
E. albido-tomentosa, Lindl. 99
E. aporina, Hook. fil. 94
E. bidens, Ridl. 90
E. biflora, Lindl. 95
E. bractescens, Lindl. 101
E. brunea, Ridl. 98
E. cepifolia, Ridl. 97

E. cristata, Ridl. 93
E. dasystachys, Ridl. 98
E. densa, Ridl. 96
E. dissitiflora, Ridl. 104
E. elata, Hook. fil. 99
E. Endymion, Ridl. 101
E. ferox, Bl. 93
E. floribunda, Lindl. 96
E. fragrans, Rchb. fil. 99
E. gracilis, Hook. fil. 95
E. hispidissima, Ridl. 94
E. iridifolia, Hook. fil. 90
E. Kingii, Hook. fil. 91
E. lancifolia, Hook. fil. 104
E. latibracteata, Ridl. 102
E. leiophylla, Lindl. 100
E. leptocarpa, Hook. fil. 92
E. longerepens, Ridl. 103
E. longifolia, Hook. fil. 91
E. lorifolia, Ridl. 98
E. Maingayi, Hook. fil. 105
E. major, Ridl. 90
E. Meirax, N. E. Br. 105
E. minutiflora, Ridl. 109
E. monticola, Hook. fil. 95
E. Myosurus, Rchb. fil. 106
E. neglecta, Ridl. 103
E. neutans, Lindl. 103
E. obliqua, Lindl. 89
E. oligantha, Hook. fil. 95
E. pannea, Lindl. 100
E. pellipes, Hook. fil. 100
E. pendula, Ridl. 92
E. pilifera, Ridl. 92
E. poculata, Ridl. 94
E. pudica, Ridl. 104
E. pulchella, Lindl. 106
E. pygmaea, Hook. fil. 110
E. recurvata, Hook. fil. 102
E. rotundifolia, Ridl. 96
E. saccifera, Hook. fil. 104
E. Scortechinii, Hook. fil. 91
E. Scortechinii, Stapf. 91
E. speciosa, Rchb. fil. 114
E. stellata, Lindl. 98
E. striolata, Rchb. fil. 99

E. suaveolens, Ridl. 101
E. tenuiflora, Ridl. 97
E. teretifolia, Griff. 100
E. tuberosa, Hook. fil. 95
E. velutina, Lindl. 94
E. vestita, Lindl. 92
E. xanthocheila, Ridl. 102
Erythrorchis altissima, Bl. 202
Etaeria albida, Bl. 211
Eulophia elata, Hook. fil. 137
E. graminea, Lindl. 137
E. inconspicua, Griff. 138
E. Keithii, Ridl. 138
E. squalida, Lindl. 137
Fieldia gigantea, Rchb. fil. 150
Gabertia scripta, Gaud. 143
Galeola altissima, Rchb. fil. 202
G. Hydra, Rchb. fil. 202
Gastrodia Hasseltii, Bl. 207
G. Malayana, Ridl. 207
Goerchis cordata, Lindl. 220
Goodyera cordata, Hook. fil. 220
G. discolor, Ker. 216
G. gracilis, Hook. fil. 219
G. lanceolata, Ridl. 220
G. rubens, Bl. 219
Govindovia nervosa, Wight 209
Grammatophyllum fastuosum, Lindl. 143
G. Finlaysonianum, Lindl. 144
G. macranthum, Rchb. fil. 143
G. paludosum, Griff. 142
G. scandens, Griff. 142
G. speciosum, Bl. 142
Habenaria carnea, N. E. Br. 226
H. gigas, Hook. fil. 227
H. Kingii, Hook. fil. 227
H. lacertifera, Benth. 227
H. Maingayi, King 228
H. monticola, Ridl. 228
H. Murtoni, Hook. fil. 227
H. Singaporensis, Ridl. 228
H. xanthocheila, Ridl. 226
H. zosterostyloides, Hook. fil. 226
Haemaria discolor, Lindl. 216
H. otletae, Rolfe. 216
Haematorchis altissima, Bl. 202

Halophila ovalis, Hook. fil. 6
H. ovata, Gaud. 6
Hetaeria alta, Ridl. 221
H. elata, Hook. fil. 221
H. nitida, Ridl. 222
H. obliqua, Bl. 222
H. parvifolia, Ridl. 222
H. purpurascens, Bl. 218
Hydrilla verticillata, Presl. 3
Hylophila lanceolata, Hook. fil. 223
H. mollis, Lindl. 223
Ipsea Wrayana, Hook. fil. 115
Lecanorchis Malaccensis, Ridl. 206
Leopardanthus scandens, Bl. 142
Lepidogyne longifolia, Bl. 224
Leucolena ornata, Ridl. 147
Leucorchis sylvatica, Bl. 206
Limodorum callosum, Bl. 119
L. Flos-aeris, Sw. 155
L. retusum, Sw. 159
L. Tankervilliae, Roxb. 119
L. veratrifolium, Willd. 120
Liparis atrosanguinea, Ridl. 21
L. comosa, Ridl. 25
L. compressa, Lindl. 25
L. disticha, Lindl. 25
L. elegans, Lindl. 24
L. ferruginea, Lindl. 22
L. flaccida, Rchb. fil. 24
L. furcata, Ridl. 23
L. gracilis, Hook. fil. 24
L. gregaria, Lindl. 26
L. lacerata, Ridl. 24
L. latifolia, Lindl. 23
L. longipes, Lindl. 25
L. Maingayi, Ridl. 23
L. mucronata, Lindl. 26
L. nervosa, Ridl. 22
L. parvula, Ridl. 23
L. pectinifera, Ridl. 23
L. pendula, Lindl. 25
L. robusta, Hook. fil. 24
L. Scortechinii, Hook. fil. 24
L. spathulata, Lindl. 25
L. transtillata, Ridl. 22
L. venosa, Ridl. 21

L. Wrayi, Hook. fil. 22
Ludisia discolor, Rich. 216
Luisia antennifera, Bl. 148
L. brachystachys, Bl. 147
L. tristis, Hook. fil. 148
Macodes Petola, Lindl. 215
Malaxis anceps, Rchb. f. 18
M. compressa, Bl. 25
M. disticha, Thouars. 26
M. iridifolia, Rchb. fil. 17
M. latifolia, Sm. 14
M. lunata, Bl. 16
M. miniata, Rchb. f. 18
M. mucronata, Bl. 26
M. plicata, Roxb. 14
Mesoclastes brachystachys, Lindl. 148
Metachilum cyathiferum, Lindl. 193
Microsaccus javensis, Bl. 172
M. virens, Hook. fil. 149
Microstylis acutangula, Hook. fil. 14
M. Bernaysii, F. Nuell 14
M. calophylla, Rchb. f. 13
M. furcata, Hook. 23
M. fusca, Rchb. fil. 14
M. Maingayi, Hook. fil. 23
M. micrantha, Hook. fil. 14
M. parvula, Hook. fil. 23
M. perakensis, Ridl. 13
M. plantaginea, Hook. fil. 14
M. Scottii, Hook. fil. 13
M. trilobulata, Kurz. 14
Mitopetalum speciosum, Bl. 114
Monochilus affine, Lindl. 218
Mycaranthus obliqua, Lindl. 90
Myoda rufescens, Lindl. 216
Neottia Petola, Bl. 216
Nephelaphyllum grandiflorum, Hook. fil. 115
N. pulchrum, Bl. 116
N. tenuiflorum, Bl. 116
Nervilia Aragoana, Gaud. 203
Neuwiedia Curtisii, Rolfe. 232
N. Griffithii, Rchb. f. 231
N. Lindleyi, Rolfe. 231
Oberonia anceps, Lindl. 18
O. aurantiaca, Ridl. 18
O. Bertoldi, King 19

O. biaurita, Hook. fil. 16
O. brunnescens, Ridl. 19
O. caudata, King 20
O. ciliolata, Hook. fil. 19
O. dissitiflora, Ridl. 16
O. gracilis, Hook. fil. 20
O. gracillima, Ridl. 17
O. imbricata, Wight 18
O. insectifera, Hook. fil. 18
O. intermedia, King 19
O. iridifolia, Lindl. 16
O. lunata, Lindl. 16
O. miniata, Lindl. 18
O. porphyrochila, Ridl. 19
O. Prainiana, King 16
O. Rolfeana, King 20
O. rosea, Hook. fil. 17
O. Scortechinii, Hook. fil. 17
O. stenophylla, Ridl. 17
O. subnavicularis, King 16
Odontochilus brevistylis, Hook. fil. 214
O. calcaratus, Hook. fil. 214
O. macranthus, Hook. fil. 215
O. pectinatus, Hook. fil. 214
Onychium crumenatum, Bl. 49
O. lamellatum, Bl. 50
Orsidice amplexicaulis, Rchb. f. 181
O. lilacinus, Rchb. fil. 181
Ottelia alismoides, Pers. 5
O. indica, Dalz 5
Oxyanthera carinata, Schlecht 200
O. decurva, Hook. fil. 201
O. elata, Hook. fil. 200
O. micrantha, Brngn. 200
Oxysepala ovalifolia, Wt. 73
Oxystophyllum atropurpureum, Bl. 40
O. carnosum, Bl. 40
O. macrostoma, Hassk. 38
Pattonia macrantha, Wight 143
Pelatantheria cristata, Ridl. 174
Peristylus chlorantha, Lindl. 228
Phaius bicolor, Lindl. 119
P. callosus, Lindl. 119
P. pallidus, Ridl. 119
P. Wallichii, Lindl. 119
Phalaenopsis albo-violacea, Ridl. 153

P. antennifera, Rchb. fil. 153
P. Buyssoniana, Rchb. fil. 153
P. cornu-cervi, Par. 151
P. Denisiana, Coyn. 152
P. Esmeralda, Rchb. fil. 152
P. fugax, Kranzl. 175
P. muscicola, Ridl. 152
P. sumatrana, Korth. 151
P. valentini, Rchb. fil. 151
P. violacea, Teysm. 151
P. zebrina, Teysm. 151
Phalidota articulata, Lindl. 136
P. decurva, Ridl. 136
P. gibbosa, De Vr. 135
P. Griffithii, Hook. fil. 136
P. imbricata, Lindl. 135
P. Khasiana, Rchb. fil. 136
P. micrantha, Hook. fil. 135
P. pallida, Lindl. 135
Phreatia listrophora, Ridl. 107
P. minutiflora, Lindl. 107
P. myosurus, Lindl. 106
P. nana, Hook. fil. 107
Physurus latifolius, Bl. 210
Platyclinis gracilis, Hook. fil. 27
P. Kingii, Hook. fil. 28
P. linearifolia, Ridl. 27
P. linearis, Ridl. 28
P. longifolia, Hemsl. 27
P. odorata, Ridl. 28
P. Sarawakensis, Ridl. 28
Plocoglottis acuminata, Hook. fil. 114
P. foetida, Ridl. 113
P. javanica, Bl. 113
P. porphyrophylla, Ridl. 113
Poaeophyllum pauciflorum, Ridl. 109
Podochilus acicularis, Hook. fil. 192
P. anceps, Schlechter 193
P. callosa, Schlechter 197
P. cornuta, Schlechter 194
P. densifolia, Ridl. 195
P. Hasselti, Schlechter 198
P. lancifolia, Schlechter 197
P. longicalcarata, Rolfe. 194
P. lucescens, Bl. 193
P. lucida, Schlechter 195

P. microphyllus, Hook. fil. 193
P. muricata, Schlechter 196
P. pendula, Schlechter 196
P. reflexa, Schlechter 196
P. rupestris, Schlechter 194
P. sciuroides, Rchb. fil. 192
P. tenuis, Lindl. 192
P. torta, Schlechter 197
P. uncata, Ridl. 195
P. unciferus, Hook. fil. 194
P. undulatus, Schlechter 194
Pogonia crispata, Wight 203
P. flabelliformis, Lindl. 203
P. punctata, Bl. 203
P. striata, Ridl. 205
Polychilus Cornu-cervi, Breda. 151
Polystachya penangensis, Ridl. 146
P. siamensis, Ridl. 146
P. singaporensis, Ridl. 146
Porpax Meirax, King 105
Preptanthe vestita, Rchb. fil. 123
Psychechilus purpurascens, Bl. 218
Pterygodium sulcatum, Roxb. 217
Ptilocnema bracteatum, Don. 135
Renanthera alba, Ridl. 155
R. Arachnites, Lindl. 155
R. elongata, Lindl. 156
R. Flos-aeris, Rchb. fil. 155
R. histrionica, Rchb. fil. 157
R. Maingayi, Ridl. 155
R. matutina, Lindl. 156
R. micrantha, Bl. 156
Renantherella histrionica, Ridl. 157
Rhynchostylis gigantea, Ridl. 158
R. Gurwalica, Rchb. fil. 159
R. guttata, Rchb. f. 159
R. proemorsa, Bl. 159
R. retusa, Bl. 158
Saccolabium Angroecum, Ridl. 172
S. Arachnanthe, Ridl. 171
S. bicarinatum, Ridl. 169
S. bigibbum, Hook. fil. 164
S. calceolare, Hook. fil. 165
S. catinatum, Ridl. 164
S. cornigerum, Ridl. 162
S. cortinatum, Ridl. 165

S. densiflorum, Lindl. 167
S. fissicors, Ridl. 169
S. fissum, Ridl. 169
S. flaveolum, Ridl. 171
S. giganteum, Lindl. 158
S. Griffithii, Par. & Rchb. fil. 172
S. guttatum, Lindl. 159
S. Garwalicum, Lindl. 159
S. halophilum, Ridl. 162
S. hortense, Ridl. 166
S. ionosmum, Ridl. 170
S. Kunstleri, Ridl. 163
S. latifolium, Ridl. 165
S. littorale, Rchb. f. 159
S. Machadonis, Ridl. 163
S. miniatum, Lindl. 170
S. minimiflorum, Hook. fil. 165
S. miserum, Ridl. 162
S. Myosurus, Ridl. 172
S. Pantlingi, Ridl. 162
S. parvum, Ridl. 167
S. penangianum, Hook. fil. 171
S. pensile, Ridl. 168
S. perpusillum, Hook. fil. 164
S. proemorsum, Lindl. 159
S. reflexum, Lindl. 156
S. Rheedii, Wight 159
S. retusum, Flor. des Serres. 159
S. rugosulum, Ridl. 165
S. sacculatum, Ridl. 168
S. saxicolum, Ridl. 171
S. Scortechinii, Ridl. 167
S. secundiflorum, Ridl. 168
S. secundum, Ridl. 168
S. suffusum, Ridl. 166
S. tenuicaule, Hook. fil. 161
S. undulatum, Ridl. 170
S. uteriferum, Ridl. 167
S. validum, Ridl. 166
Sarcanthus densiflorus, Par. & Rchb. f. 168
S. guttatus, Lindl. 159
S. Kunstleri, King 163
S. pensile, Ridl. 168
S. rostellatus, Ridl. 169
S. sacculatus, Ridl. 164
S. Scortechinii, Hook. fil. 167

S. secundus, Griff. 168
Sarcochilus adnatus, Ridl. 177
S. arachnites, Rchb. f. 183
S. aureus, Hook. fil. 175
S. biserratus, Ridl. 176
S. brachystachys, Hook. fil. 181
S. brachyglottis, Hook. f. 182
S. calceolus, Lindl. 181
S. caligaris, Ridl. 175
S. carinatifolius, Ridl. 187
S. cladostachys, Hook. fil. 175
S. filiformis, Hook. fil. 184
S. hirsutus, Hook. fil. 179
S. hirtutus, Hook. fil. 178
S. lilacinus, Griff. 181
S. notabilis, Hook. fil. 184
S. pardalis, Ridl. 185
S. pauciflorus, Hook. fil. 184
S. psiloglottis, Ridl. 187
S. recurvus, Hook. fil. 185
S. Scopa, Hook. fil. 183
S. Scortechinii, Hook. fil. 183
S. sigmoideus, Ridl. 175
S. stenoglottis, Hook. fil. 175
S. tanyphyllus, Ridl. 176
S. trichoglottis, Hook. fil. 185
S. unguiculatus, Lindl. 175
S. virescens, Ridl. 176
Sarcopodium Lobbii, Lindl. 65
S. macranthum, Lindl. 64
S. pileatum, Lindl. 63
Serpicula verticillata, Roxb. 3
Sestochilus uniflorum, Breda. 65
Spathoglottis aurea, Lindl. 118
S. Handingiana, Par. & Rchb. f. 118
S. lilacina, Griff. 117
S. plicata, Bl. 117
S. plicata, Griff. 118
S. trivalvis, Lindl. 188
S. Wrayi, Hook. fil. 118
Stratiotes acoroides, Linn. fil. 6
S. alismoides, Linn. 5
Stouritis violacea, Rchb. f. 151
Staurochilus fasciata, Ridl. 153
Stauropsis gigantea, Benth. 150
Stereosandra javanica, Bl. 224

Taeniophyllum rubrum, Ridl. 173
T. serrula, Hook. fil. 173
Tainia atropurpurea, Ridl. 115
T. latilingua, Hook. fil. 115
T. Maingayi, Hook. fil. 115
T. Penangiana, Hook. fil. 116
T. speciosa, Bl. 114
Thecostele alata, Par. & Rchb. fil. 190
T. maculosa, Ridl. 189
T. Maingayi, Hook. fil. 190
T. quinquefida, Hook. fil. 191
T. secunda, Ridl. 190
T. Zollingeri, Rchb. fil. 190
Thelasis capitata, Bl. 199
T. carinata, Bl. 200
T. contracta, Bl. 201
T. decurva, Hook. fil. 201
T. elata, Hook. fil. 200
T. elongata, Bl. 199
T. hongkongensis, Rolfe 199
T. macrobulbon, Ridl. 199
T. triptera, Rchb. fil. 199
T. Zollingeri, Rchb. fil. 199
Thrixspermum Arachnites, Rchb. fil. 181
T. brachyglottis, Ridl. 182
T. Calceolus, Rchb. fil. 181
T. lilacinum, Rchb. fil. 181
T. notabile, Ridl. 183
T. pauciflorum, Ridl. 182
T. Scortechinii, Ridl. 183
Trichoglottis fasciata, Rchb. fil. 154
T. retusa, Bl. 157
T. scaphigera, Ridl. 157
T. tetraceras, Ridl. 158
Trichotosia biflora, Griff. 95
T. ferox, Bl. 93
Tripleura pallida, Lindl. 27
Tropidia angulosa, Bl. 209
T. graminea, Hook. fil. 209
T. Govindovii, Bl. 209
T. Maingayi, Hook. fil. 209
T. semilibera, Bl. 209
T. squamata, Bl. 209
Tylostylis rigida, Bl. 105
Vanda gigantea, Lindl. 150
V. Hookeriana, Rchb. fil. 154

V. Lindleyana, Griff. 150
Vanilla albida, Hook. fil. 200
V. Griffithii, Rchb. fil. 201
V. pterosperma, Lindl. 202
V. rubiginosa, Griff. 202
V. tolypephora, Ridl. 201
Vrydagzynea albida, Bl. 211
V. gracilis, Hook. fil. 211
V. lancifolia, Ridl. 210
V. tristriata, Ridl. 211
Zeuxine affinis, Benth. 217
Z. bracteata, Wight 217
Z. brevifolia, Wight 217
Z. clandestina, Bl. 218
Z. emarginata, Lindl. 217
Z. integerrima, Lindl. 217
Z. membranacea, Lindl. 217
Z. procumbens, Bl. 217
Z. reniformis, Hook. fil. 219
Z. robusta, Wight 217
Z. rupestris, Ridl. 218
Z. sulcata, Lindl. 217
Z. Tripleura, Lindl. 217
Z. violascens, Ridl. 218
Zosterostylis arachnites, Bl. 225
Z. zeylanica, Lindl. 235
Z. Walkerae, Wight 235

New York Botanical Garden Library
QK 354.7 .R5 c.2 pt.1 gen
Ridley, Henry Nicho/Materials for a flor
3 5185 00060 2167